

# CITY GOVERNMENT

AND JOURNAL OF CITY AND VILLAGE AFFAIRS.

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## CITY GOVERNMENT

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### WELCOME.

*City officials and friends of City Government are cordially invited to make the offices of City Government their headquarters during their visit in either city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.*

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### SUPREME COURT DECISION FAVORS VOTING MACHINES.

Justice Albert H. Sewell, of the Supreme Court, has denied the motion on the part of George Robinson, of Elmira (N. Y.), for an order requiring Mayor Frank H. Flood, of Elmira, to show cause why ballot clerks should not be appointed in that city for the coming election. It was a test case brought for the purpose of testing the legality of the use of the voting machine at general elections. The relator contended that the machine is illegal in that it does not provide for votes to be cast separately for each of the presidential electors.

The defendants, on the other hand, called attention to section 162 of the election law, which says that voting machines may be provided with one ballot in each party column containing only the words "presidential electors," and that a vote for such ballot shall operate as a vote for all the presidential electors of that party.

The relator declared unconstitutional that part of section 162 of the election law mentioned, in that it deprived voters of the privilege of splitting on presidential electors.

The court in rendering its decision, said that inasmuch as an appeal to the Court of Appeals would probably be taken in any event, and because of the short space of time intervening between now and election, he deemed that an early decision would be preferred to a delayed one, and he would therefore render decision at once denying the motion.

### Editorial Comment.

It would be a great relief to the average city official if he were not obliged to maintain an expensive political fence in order to keep his job.

The most notable municipal gathering of the year was that of the National Municipal League at Milwaukee last month. An account of its work will be found elsewhere in this number.

### A LIVE DIRECTORY.

The advertising pages of "City Government" constitute a live directory of the wide-awake firms and manufacturers who sell anything to be used in the construction and maintenance of the modern city. Those who are specially interested in fire matters will do well to read the new "ads" in this number. When you see an ad. in "City Government" you may know it is reliable.

### WHAT OUR SUBSCRIBERS THINK.

Mr. Joseph T. Alling, President of the Good Government Club of Rochester, (N. Y.) in correspondence to "City Government," says: "It is a very valuable paper to anyone whose duties make such information necessary." An alderman in a Louisiana city, in sending in his subscription, says: "City Government" has been recommended to me as of great benefit and value on municipal subjects and problems." Chief E. J. Jewhurst, of the Auburn (N. Y.) Fire Department, in a recent communication, said: "I consider 'City Government' a publication of much value to every one interested in public affairs. Its contents have always been most interesting to me."

### THE DEADLY ELECTRIC CURRENT.

Two policemen were killed by electric shocks in St. Louis the other day, while they were using the police telephone, and eleven other officers have been injured in the same manner. The crossing of an electric light wire with the telephone circuit caused the catastrophe. Similar occurrences are matters of daily record in the press of the country. In all cities of 25,000 and upwards all wires should be put under ground. It is worse than folly to continue to string them on poles; it is criminal negligence and a total disregard of human life. But if some obstacle stands in the way for the immediate removal of wires carrying high potential currents the city authorities should avail themselves of a "cut out" recently invented. This cut out, when attached to a telephone wire, makes it impossible for a heavy current to steal in on an operator, or other person using the instrument, unawares. It has an automatic action which is deadly to the deadly current and absolutely cuts it out, when, by accident, it runs away from the prescribed path. The cut out is an inexpensive device and should be attached to every telephone in order to avoid accidents.

## RECEIVED GRAND PRIZE.

"City Government" is in receipt of a communication from the Director of Liberal Arts of the Paris Exposition, which will interest our readers, as it confirms their judgment that "City Government" is not only a good thing but the best thing in the municipal journal field. It relates to the "Grand Prize," most coveted of all gifts of a World's Exposition, and the Director writes: "You are entitled to use this award of Grand Prize."

## EMBALMED MILK.

The coroner, who was called to investigate the death of an infant at the Orphans' Home of Indianapolis (Ind.) returned a verdict that death resulted from the use of formaldehyde used in milk to feed the infant. There has been a determined effort on the part of many health officers throughout the country, to put an end to this manner of slaughtering the innocents which is to be heartily commended. But it would not be a bad idea for others to spend a little gray matter in wrestling with this important question: the prohibition of the use of formaldehyde in milk. Let the milk embalmer be given some of his own medicine.

## NEW SECRETARY FOR THE L. A. M.

For some time past there has been considerable trouble between the Secretary of the League of American Municipalities and the other officials, arising from a difference of opinion as to the manner of conducting the office of the secretary, and as to who should be the custodian of the funds. This dissatisfaction has culminated in a request for the resignation of the secretary. This matter came to the surface, recently, over a misunderstanding as to the credit of the annual fee for the city of Columbus, (O.); and appears in a letter of President Johnson, of Denver, (Col.) to Mayor Swartz. The letter follows:

"Denver, Col., Sept. 12, 1900.

Hon. Samuel F. Swartz, Mayor, Columbus, Ohio.—

"Dear Sir: I write this to report that Mr. B. F. Gilkinson, who has been secretary, is not authorized to collect dues from members of the league. Please report to Thomas P. Taylor, treasurer, Bridgeport, Conn., if any dues have been paid and when.

"Mr. Gilkinson has agreed to resign the position of secretary, and the executive committee have arranged to fill the vacancy.

"We have every reason to believe that we will have a successful meeting at Charleston December 12 next. Under the change proposed to be made in the office of secretary, we have every reason to believe that the league will be of far greater advantage to the different cities than it has been in the past.

"I would be glad if you would make every effort to secure further membership among your neighboring cities. Very truly yours,

H. V. JOHNSON, President."

Mr. Gilkinson says he has not resigned, but that he will not be a candidate for re-election.

## GOOD EXAMPLE TO FOLLOW.

Director of Public Safety Brown, of Pittsburg, said to the superintendent of the Health department when he was about to order an equipment for the new laboratory: "Get the best that money will buy. The best is none too good for this city when the health of its citizens is involved." That is what may be called common sense and a policy which is in perfect accord with the old proverb: "An ounce of prevention is worth a pound of cure." It is a policy which should be imitated in every city.

## THE AKRON AFFAIR.

In order that our readers might have a true and ungarbled account of the Akron riot we have secured a full statement of the case from Mayor Young. We made a comment about the riot in the September number, basing it upon information taken from one of the Akron papers, supposing it to be reliable. Alas, for the fallibility of the newspaper reporter! It seems our informant was misinformed. Our readers will find the account given by Mayor Young, to be interesting and quite different, in some of its details, from the account given in the daily press.

## METROPOLIS OF OHIO.

Cleveland has a population of 381,768! Let it be blazoned on the sky. Do not forget and speak of Cincinnati as the metropolis of Ohio. If you do, Cleveland will never forgive you. While the figures do not quite reach the goal Cleveland marked out for herself, yet they are large enough to give her the lead over every other city in Ohio and, also, over Buffalo. This victory will be celebrated on October 8th, 9th, 10th, 11th, 12th and 13th. Cleveland is one of the few cities—perhaps a half dozen—that is pleased with the census returns and has not threatened to take a new one.

## THE NEW NOZZLE SYSTEM.

In another column will be found the most instructive and interesting paper on "Fire Streams and Their Handling, etc.," that we have ever seen.

It brings out many valuable points in regard to fire streams and their application on fires that generally are not well understood. It shows the helpless condition of fire companies in getting to work on a fire with their ordinary sizes of nozzles after the fire has reached certain degrees of heat. It shows that small streams do not require high pressures to get their best effect on a fire, and that large solid streams can be thrown very long distances under low pressures, thus saving a vast amount of wear and strain on pumps, pipes, hose, etc., adding largely to their reliability. It shows how the efficiency of fire companies can be doubled at a very slight expense, why certain streams would be effective in some fires and in others be the direct means to increase it into a conflagration.

This paper was read before the Massachusetts State Firemen's Association, at North Adams, Mass., Sept. 5th to 7th, by Mr. C. R. Robinson of East Concord, N. H., of the firm of Samuel Eastman & Co., inventor and manufacturer of the Eastman New Nozzle System.

## COLUMBUS TO HAVE NEW STREET SIGNS.

Alderman Hammerstein of Columbus (O.) has succeeded in securing the appropriation of \$4,000 for placing street signs at the intersection of all streets in the city. This action will be more appreciated by visitors than by citizens of Columbus. Only about one city in ten has a good system of street signs. New York, Philadelphia and Buffalo may be numbered among those which are well equipped in this particular. Let other cities follow the example of Columbus.

## THE FIREMEN'S NUMBER.

This issue may rightly be called "the firemen's number," because so much of its space is given up to fire matters. The programs of one International and one National gathering of firemen, at Charleston, S. C., and East St. Louis, Ill., respectively, are given; several papers read before the meeting of the International Association of Municipal Electricians, held at Pittsburg last month, also appear in this number; together with a most valuable table showing the population, area in square miles, number of fires and per capita loss in more than two hundred cities in the United States. Altogether it makes a number which is worth more than the price of a year's subscription, especially to firemen.

## THE GALVESTON FLOOD.

The story of the hurricane which visited Galveston has been told and retold many times since the date of its occurrence. The horror of the situation has been so faithfully pictured by the daily press that the whole country has been impelled to volunteer its assistance. Every city, large or small, has promptly contributed, according to ability, toward the relief of the stricken city. Even foreign cities have forwarded contributions by telegraph. The world has exemplified these lines of Bobby Burns: "Affliction's sons are brothers in distress; A brother to relieve, how exquisite the bliss!"

Already the storm swept city is planning to rebuild. It does not propose to retreat, but to rear another city, stronger and more impregnable than its predecessor upon the old site. With a contribution of \$5,000,000 from the outside, to relieve necessitous cases caused by the awful calamity, it will reclaim its own from the encroachments of the gulf.

At the present writing civic control once more holds sway. The break in the water pipes which crossed the channel and supplied the city with water was almost immediately repaired; the wrecked power house of the electric lighting and street railway company has been sufficiently restored to continue the operation of these modern necessities. But it will take a much longer period of time, months and perhaps years, to replace the city hall and put in perfect condition the pavements and streets of the city. Mayor Jones, the chief executive of the city, seems to possess the essential characteristics to lead the citizens of Galveston to a realization of their fondest hopes.

## INFORMATION WITHOUT COST.

Each subscriber to "City Government" is entitled to ask questions relating to Municipal Affairs and to receive answers from our "Department of Inquiry."

This department can be of valuable assistance to you. It can tell you how to do and where to buy; how other cities have done and are doing; it has ample facilities for securing statistics and information.

There is no cost to you—your subscription to "City Government" covers it all.



## RED TAPE SUPREME.

New Orleans recently had a disastrous fire which called out the entire department, but that was insufficient. There happened to be on hand, but not in commission, a large autoengine—just received but ready for use, barring the red tape—which was sorely needed. It was not employed at this fire because, forsooth, it was not in commission! "The vindicator," of that city, said editorially: "Official red tape was not better illustrated than when the powerful fire fighter, the horseless engine, was not used in this town to save one of the handsomest buildings in it, because the engine was not in commission. All honor to the disciple of the pink string!"

## Personals.

—Mayor Phelan, of San Francisco, recently returned from a trip abroad, including the Paris Exposition.

—Mayor Frank J. Nelson, of Hornellsville, (N. Y.), has been nominated for Congress by the Democrats of his district.

Mayor William C. Maybury, of Detroit, who is the Democratic candidate for governor in his state, is making a warm canvass.

—Mr. Andrew Carnegie has promised the Greenock (Scotland) Town Council the sum of \$25,000 for founding a public library.

—Mayor W. L. Golding, of Marion (Ind.) died in that city on September 10th. Mr. Golding was elected Mayor in 1898 by the Republicans and was a popular official.

—Miss Mary Anderson is the City Attorney of Palmyra, (Mo.) She made her official debut in Court the other day and succeeded in securing a conviction. Her victim was fined two dollars.

—Commodore George W. Morton and the Merrymount Lodge of I. O. G. T. recently presented a drinking fountain to the City Council of Quincy (Mass.) for which they have been tendered a vote of thanks.

—Mr. George W. Burnside is Mayor of Sioux Falls, (Ia.), says the "Argus Leader" of that city. "The saloon men attempted to run the town wide open in defiance of the law, and were beaten at their own game. The Mayor not only succeeded in keeping the saloons closed on Sunday but has commenced an action against the offending saloon keepers."

—Hon. Erastus C. Knight, of Buffalo (N. Y.) has been nominated by the Republican State committee, to fill the vacancy on the State ticket caused by the death of Comptroller William J. Morgan, who had been renominated by the Republican convention. Mr. Knight is exceedingly popular in his own city and has been twice elected comptroller of the city, once when the head of his ticket was defeated.

—Mayor Nichols, of Wilkes-Barre (Pa.) gave a ruling the other day, in his capacity as Police Justice, (an official duty which devolves upon all mayors of cities of the third class in Pennsylvania) which was worthy of Solomon. Two women had a quarrel, one having the other arrested for slander. When the matter was brought before the mayor, the women had a war of words which no protests from the court could stop. The mayor finally had them both locked into the same room where they were told to talk it out. It took three hours to talk it out, but "it" was finally settled and upon their assurance to the mayor that "they loved each other dearly," they were released.

—Mayor Comstock, of Spokane, (Wash.) is enjoying a well earned vacation in the East.

—Mayor Swartz, as a good Methodist, recently invited all the city officials of Columbus, (O.) to attend a lawn fete at his home.

—Mayor Deihl, of Buffalo, has appointed Mr. Augustus F. Scheu as Commissioner of Public Works, to succeed the late Martin Maher.

—Mayor James Gray, of Minneapolis, (Minn.) has been renominated on the Democratic ticket. His opponent is Dr. A. A. Ames, on the Republican ticket.

—District Attorney Gardner is no longer on the anxious seat. Governor Roosevelt has dismissed the charges made against him by the City Club of New York.

—The following gentlemen were recently elected as bond trustees of Jacksonville (Fla.): Frank C. Groover, Phillip Walter, B. H. Barnett, S. P. Holmes, E. J. Triay, T. V. Porter, E. F. Champplain, F. P. Fleming and W. F. Coachman.

—"City Government" regrets to announce that Director of Public Accounts Cott, of Columbus, (O.) who has been spending several months in a vain search for health, has felt it necessary to resign. Mr. A. C. Armstrong has been appointed by Mayor Swartz to fill the vacancy.

—Mayor Wm. C. Maybury, of Detroit, of Taunton, England, is the guest of the city of the same name in Massachusetts. For many years there has existed a friendly feeling between the old and the new Taunton. The old Taunton is about 1,000 years old, while the new can boast of but 250 mile posts.

## Press Comments on Municipal Affairs.

## Corporations and Bribery.

["Press-Knickerbocker," Albany, N. Y.]

Corporations controlling valuable utilities which properly belong to the people usually manifest an inclination to corrupt public officials. Many of the important municipalities of the United States have common councils which are really the agents of railway, gas and electric lighting monopolies.

The good folk of Scranton, Pa., are learning some startling news about the "business transactions" of their aldermen. Recently, investigations showed that the manager of a telephone ordinance paid as high as \$150 to each member of the common council for votes. The agent of the railway company in Scranton testified that he had given certain members of the council \$25 a month, so that they would be convinced that certain ordinances which he favored or rejected were handled in such a way that the railway company would be satisfied.

Another gentleman who corrupts city officials reported that he took care to see that the councilmen received fireworks in July and turkeys at Christmas!

There are many members of boards of aldermen who wish to serve their constituents honestly and ably. But the wicked corporation agent is always on hand to make evil suggestions and cause the official to become a bribe taker! Aldermen should be protected against these corruptionists. Municipal ownership is their only salvation. With the private corporations out of business, the councilmen could rest assured that citizens would not attempt to bribe their public servants.

## Abuse of the Police Power.

["Free Press," Detroit, Mich.]

There is no question as to the necessity of restraining many of the individual policemen wherever he is employed. The broader and more enlightened he is the less the danger of his exceeding his authority. In exact ratio with his ignorance is his tendency to arrogate powers and to transcend them under special provocation. He is liable to be carried away by his temper or personal animosity and to arbitrarily revoke the privileges that constitute personal liberty.

The duties of a peace officer are extremely trying. It is difficult for him to set aside his own feelings and keep in mind the fact that he is without authority to arrest a citizen except for crime or misdemeanor, under legal warrant in form of a writ or otherwise, as the statutes may provide. A policeman has no more right to arrest a man for merely provoking him by argument or objectionable language or because of an existing enmity than a layman has to commit assault and battery, or worse, under like provocation.

Next to the danger of a policeman's following the guide of his temper instead of his judgment, is his inclination to exercise the bumptiousness that too often accompanies a little brief authority. A man should not be ordered to move on, or arrested for not moving on, when standing in front of his own house with a hope of reducing the hardships of hot weather. One who accompanies a friend to the station with a view to making a protest, if he grows no more eloquent than many a lawyer in the police court, should be heard instead of being locked up. Arrests have been made in some cities for purely partisan purposes. The man attacked and whipped has not been infrequently gathered in while the original assaulter and batterer went free.

These illustrations might be multiplied, but they serve to show the conservative policy that should be carried out by active policemen, and the necessity that exists for a stern exercise of authority on the part of the commission. It may well exercise leniency where an officer has been compelled to do his work in a criminal quarter, and where good generalship requires him to forestall opposition; but it is essential to personal liberty that he exercise a nicety of discrimination rather than a bull-headed desire to have his own way.

## Convention Dates.

## OCTOBER.

2-5.—Pennsylvania Firemen's Association, New Castle.

4-5.—National Firemen's Association, East St. Louis, Ill.

9-12.—International Association of Fire Engineers, Charleston, S. C.

—Indiana Municipal League, Richmond, Ind.

22-26.—American Public Health Association, Indianapolis, Ind.

## DECEMBER.

12-15.—League of American Municipalities, Charleston, S. C.

**Fifty Cents a Copy will be paid for a few copies of City Government, August and November, 1896.**

**Contract vs. Day Labor.**

The question as to whether the work of the city shall be performed by contract or by day labor continues to excite general interest. It may be of interest to "City Government" readers to learn what has been the experience of the London County Council regarding the respective advantages of the day labor and contract systems. A local contemporary says of the experiment:

"Until three years ago the council's engineering and building undertakings were in the hands of what was known as the 'works committee.' As a result of an investigation, however, this body was found to have so scandalously misused its authority that it was ignominiously disbanded. During the last three years, therefore, the manager of works has had a comparatively free hand, but the 'progressive' majority in the council being much in favor of the direct employment experiment, a great deal of work has been done by day's labor in place of by contract. It cannot be pretended that the result has been a success, so far as the ratepayers are concerned. The losses have reached the pretentious sum of \$350,000, and while it is argued by the advocates of the day labor system that by it, at all events, if the work is costly it is better done; this statement is directly opposed to the evidence before the committee which inquired into the scandals four years ago. The argument that it is necessary to maintain this direct employment department is weakened by the fact that its establishment charges are nearly three times as great as those of any contractor, 'if only to keep the bad contractors in order.'

"During the three years of the new regime the construction of a great outfall—an engineering undertaking of a

kind which, it has always been asserted, gives the best results by direct employment—has been begun and completed, and the cost has exceeded the estimate by over \$80,000. But this sum does not alone represent the total losses on the works completed during the past half year. While on certain jobs a profit is claimed of about \$20,000, this is more than counterbalanced by a loss of over \$38,000 on other building operations. On building jobs in connection with artisans' dwellings there has been a further loss of \$130,000. In another instance, seven blocks of dwellings, estimated to cost \$281,000 by direct employment, when put out to tender were erected for a little over \$274,000. Under the present regime certain dwellings estimated to cost \$246,000, were refused by the direct employment management, and a contractor erected them for less than \$235,000. Again at Millbank, the works manager declined to execute orders on the figures of the estimating officer, while a contractor accepted them, and yet later the manager professed his inability to build five other blocks except at 3 1-2 per cent. increase on the estimated figure—\$600,000. The contractor was once more called in to take up the department's leavings, and the buildings were erected at a saving of about \$35,000."

**COURTING NOT ALLOWED IN PUBLIC.**

The Council of Peru, (Ind.) recently passed the following ordinance:

"Whoever shall in said city congregate on or upon any of the streets in the city of Peru for the purpose of courting, making love or spooning or carrying on courtship shall be guilty of a misdemeanor and shall be fined not less than \$3 or more than \$100 for each offense."

Four arrests, it is reported, have already been made, and the ordinance will be tested.

**SLOT MACHINES MUST GO.**

Director of Public Safety Brown, of Pittsburg, (Pa.) has issued an edict against the slot machines of every kind and description, from the gambling device—whether for one cent or one dollar—to the display of obscene pictures. Slot machines of some sort are found in every saloon and disorderly house. The order of the Director will banish the entire lot from the city.

\* \* \*

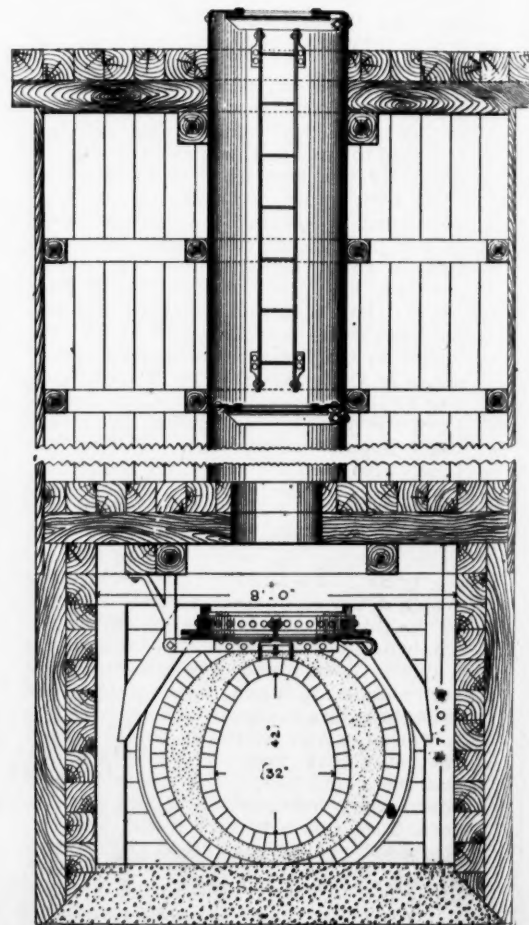
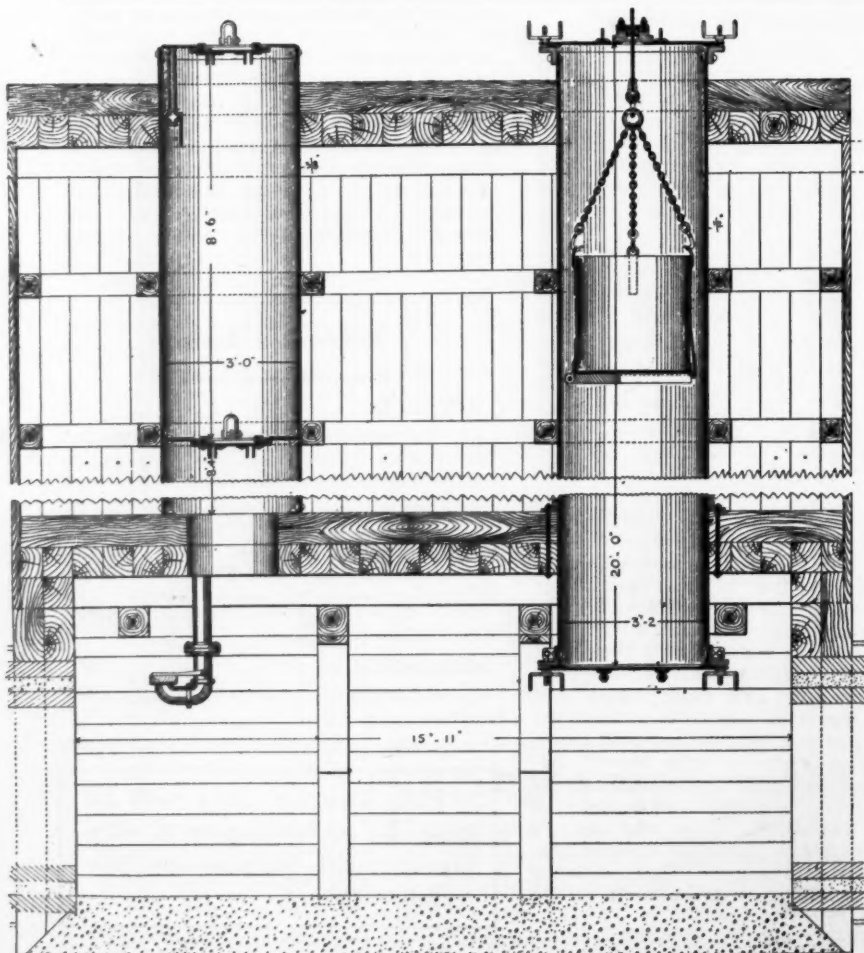
**THE MAYORS OF FRANCE FEASTED.**

A banquet of magnificent proportions was given in Paris on September 22, when President Loubet entertained all the Mayors of France, to celebrate the Exposition. More than 15,000 guests sat down at tables in immense tents erected in the garden of the Tuilleries, overlooking the Rue de Rivoli. The banquet cost 500,000 francs, or \$100,000. The President, his Ministers and the Exposition officials were present and a gala exhibition was held in the Sala des Fetes at the Exposition in the afternoon, followed at night by a fete with splendid illuminations.

\* \* \*

**THE FALL OF ATLANTA'S MAYOR.**

A trifle over a year ago, Mayor Woodward, of Atlanta, (Ga.) publicly gave his word of honor that he would not become intoxicated again during his term of office, and, that if he did, he would immediately resign. Three or four months ago he broke his pledge, but refused to resign. The matter was not pushed until recently, when his bibulous habit became too obnoxious to be longer tolerated by a respectable public, and the Council has taken action against him, which will result in his immediate resignation, or removal from office by impeachment proceedings.



SECTIONS OF CAISSON AND AIR LOCK.

CUT J.



**TUNNELING THROUGH QUICKSAND.\***

By Harrison P. Eddy, Superintendent of Sewers, Worcester, Mass.

One of the most difficult pieces of work in connection with our new sewer system was the construction work through a long stretch of quicksand. The average depth was 27 feet, and it was 1,480 feet long.

Size: Diameter of drift, six feet one and half inches; diameter of inside safety lining, four feet 10 inches; dimensions of finished sewer, 32x42 inches.

Estimated cost, \$40,000; actual cost, \$40,696.94.

Work commenced, March, 1899; drifting finished, November, 1899. (Over 1,100 feet of lining was put in.)

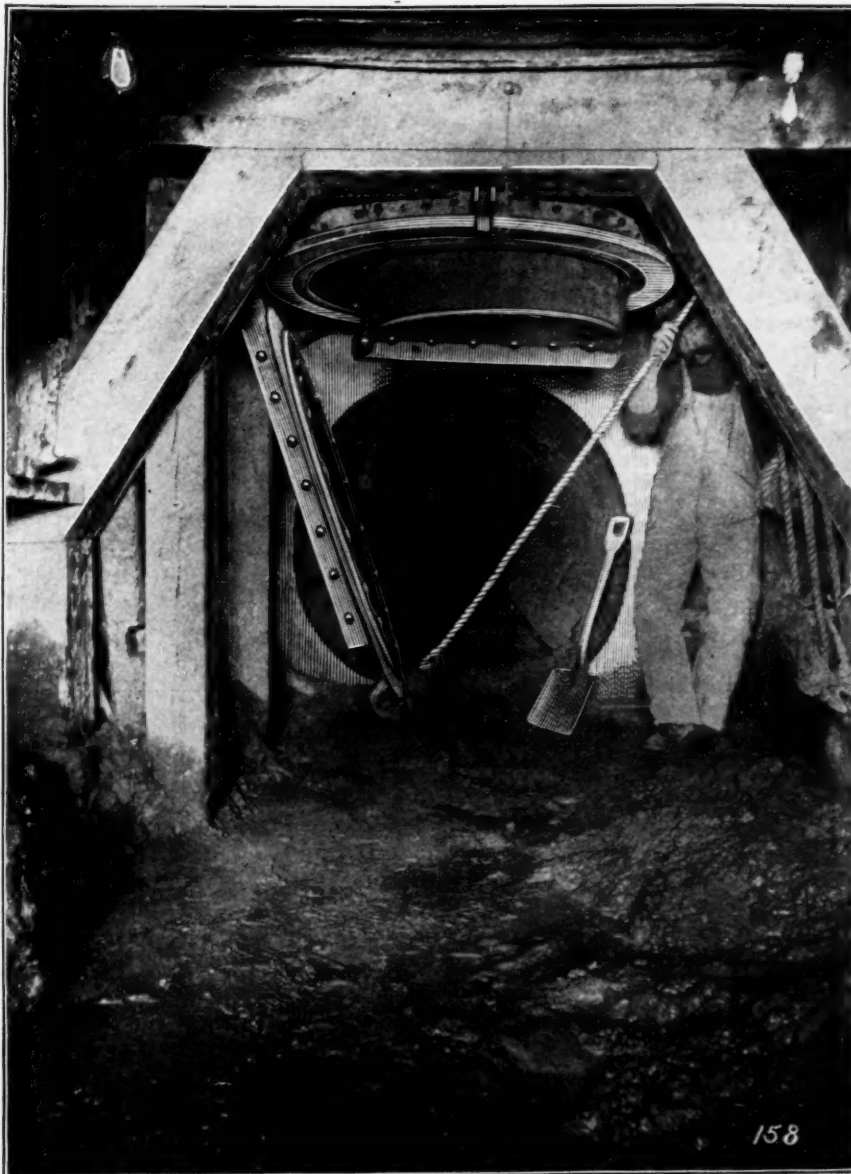
When it was learned that the material in hand was unfit for tunneling by ordinary means, studies were at once begun to determine the best method of excavating to be applied to it. Borings were made in order to ascertain the extent of the bed of quicksand through which the east and west interceptors must be constructed. This was done by the ordinary artesian well-driving apparatus, six-inch casting pipe being used and pulled up as soon as the necessary samples had been taken. A number of wash borings were also made by the Engineering Department in connection with its studies on the grade crossing problem. In this way the kind of material to be met in the construction of the interceptors has been ascertained over nearly the entire distance to be traversed.

It was found that the bed of quicksand in the vicinity of Green street extended from Pond street, through Green street, across Franklin street, through Bartlett place and Cherry street, to within about 50 feet of Warren street, and that it extends to great depth, in some places 60 feet of pipe not reaching any other kind of material. Along this route there are a number of brick blocks which would not be more than 12 or 14 feet from the trench in case of open cut, and it would be very difficult to open cut across the railroad crossing. It should also be observed that Green street is a very busy street with the double tracks of the street railway, over which cars pass once in about three minutes, and there is no parallel street through which this traffic could be conveniently turned.

For these reasons it was decided to construct the interceptor through this section in tunnel, driving the headings with assistance of air pressure.

A caisson was sunk on the line of the tunnel at the corner of Temple and Green streets, which served as a working chamber from which the tunnel drifts

\*This is the second of a series of three articles relating to the sewer system of Worcester, by Superintendent Eddy. The first one appeared in the August issue and the series will be concluded in the November number.—Editor.



CUT K.—WORKING CHAMBER OF CAISSON SHOWING LOCK WITH BUCKET ASCENDING, LOWER DOOR BEING CLOSED.

were started, and into and out of which all materials were taken through the air-locks. The caisson, which was eight feet wide, 16 feet long and seven feet high, was constructed on the surface of the ground and was lowered into position by digging from under the cutting edge from the inside and weighting it down with pig-iron to overcome friction and air pressure. It was built of two thicknesses of eight by eight-inch spruce timbers, one course running horizontally and the other vertically. These timbers were securely bolted and drifted together and calked by professional ship calkers. The bottom of the timbers on the sides were cut on a bevel on the inside so as to form a cutting edge. The deck timbers, of same thickness and dimensions as the side timbers, were supported by the sides and also by two trusses, as shown in cut J. The inside of the entire caisson was mopped with tar after it had been calked. The caisson was lowered until the ground water was reached without the aid of air. Then a slight

pressure was applied to drive the water out of the sand, and this was gradually increased until the caisson had reached its proper grade, when the bottom was filled with concrete. Cut K shows the working chamber of the caisson.

Two air-locks were attached to the deck of the caisson; one for the use of the men, and the other for the passage of stock and dirt excavated.

The bucket lock was three feet in diameter at the top, and three feet four inches in diameter at the bottom. Cut J shows a cylindrical lock three feet two inches in diameter, instead of the tapering lock used.

A lock three feet in diameter was provided through which the men entered and left the caisson. This lock was eight and one one-half feet in length. It was built of three-eighths inch boiler-plate, with a shaft of the same material extending from the bottom of the lock to the top of the deck, as shown in the accompanying drawing. The top and bottom doors were of three-eighths inch iron, stiffened

by angle irons, and faced with rubber gaskets. This lock and the shaft below were provided with iron ladders.

The caisson was provided with a Swedish telephone connecting with the engine-house above and with the power station on Water street. Compressed air could be admitted through two pipes, although only one was used. A water pipe with hose attached was also provided, as well as suction pipe from pump to remove drainage water.

The compressed air was conducted from the power-station to the regulating valves at the caisson at high pressure. The hoisting-engine operating the buckets was driven by air taken direct from these mains, and the air for the tunnels was passed through two automatic pressure regulating valves, one four-inch and one three-inch. These valves governed the pressure perfectly, both when small and large amounts of air were being used.

The temporary lining, put in as fast as material was excavated, consisted of wooden rings 18 inches long. These rings were cut into eight segments, and as the segments had to be put in place from the inside, one piece was cut so as to form a key, wedging as driven into position from the inside, and the segments each side of it were cut to fit this key. All other pieces were cut on the radial lines. The segments were framed of two by three-inch North Carolina pine, being pinned together by one-quarter inch carriage bolts. The ribs of the rings were cut on the circle, six feet in diameter on the outside. These segmental frames were covered with three-fourths-inch matched spruce sheathing, which was stuck curved on one side to rest tightly on the curved frame. The frames were bored by template, so that there was no delay in bolting them together when in place. Three one-half inch bolts were used on each side and two of the same size on each end.

When the caisson was finally in place and the bottom had been put in, openings five and one-half feet in diameter were made in each end, and the first rings bolted to the timbers. As fast as the necessary space was excavated, one section of a ring was quickly put in place and securely bolted to the ring which had just previously been placed. (See Cut L.) In this way the material through which the excavation was made was held in place until the safety lining of brick was put in. It was customary for the safety lining to be built during the first part of one shift, the work being done under the protection of the temporary wooden lining during the balance of that shift and the whole of the one following. In this way from eight to 12 feet of masonry could be laid in each heading in one day.

Much of the time the sand was so loose that it was necessary to work behind the bulkhead, shown in Cut L. This greatly

retarded progress, as considerable time was lost in putting in and taking out the bulkheads, which consisted of planks bolted to the rings. It was also necessary to use large quantities of clay to close the cracks in the bulkheads and between the wooden rings.

As has been mentioned, the temporary lining was followed up daily by the construction of the safety lining. This was simply a rim of brickwork consisting of bricks laid flat in the segments of the rings to level up with the ribs, inside of which was laid one course of brick on edge. All masonry was laid in Portland cement. The centres were allowed to remain in place until the cement was hard set, when the tunnel was considered perfectly safe to work in. In fact, the wooden rings were considered safe when the pressure was on, but it was not deemed wise to depend on them when there was no pressure. As fast as the masonry was

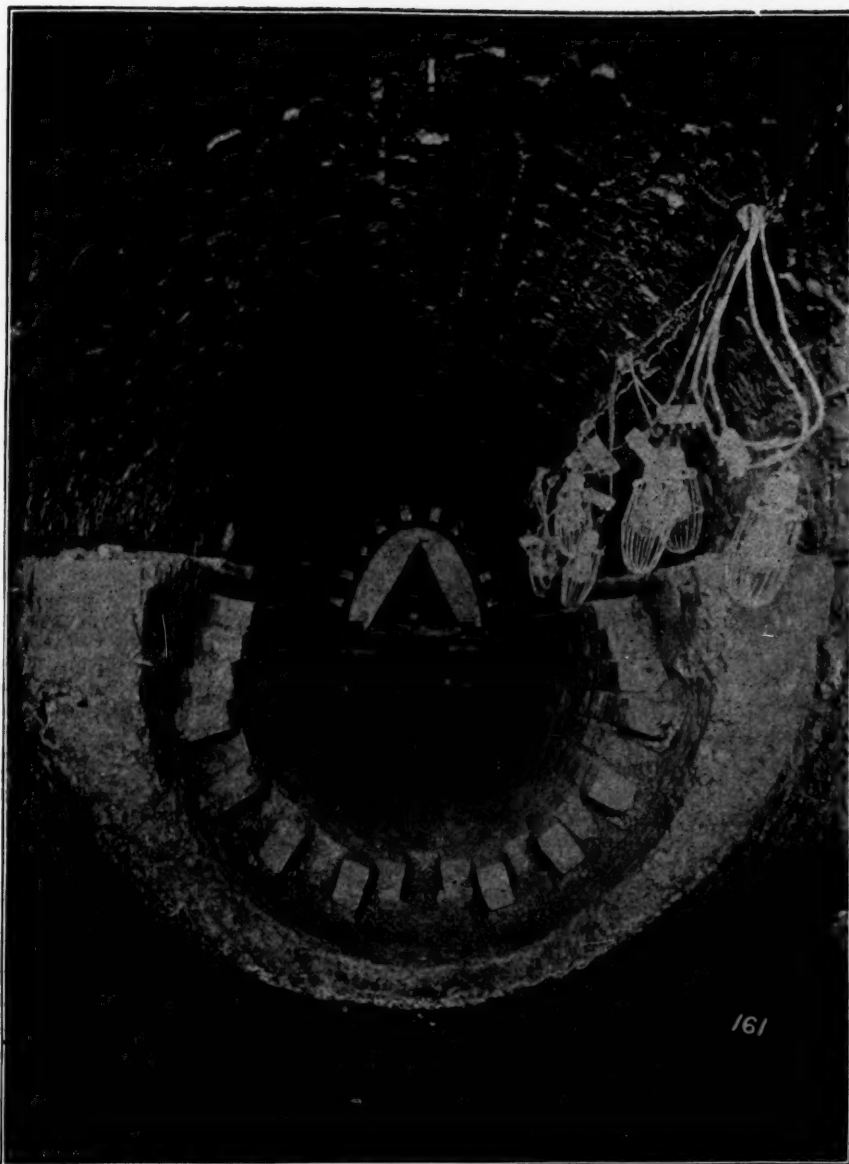
completed, it was washed with neat Portland cement, to prevent leakage of air. It was also necessary to go over the work frequently and wash sections which had developed new leaks. Cut M shows the safety lining as well as the finished work.

After the tunnel was completed, the final lining, bringing it to the required shape, size and grade, remained to be put in. This consisted of an ordinary egg-shaped sewer, 32x42 inches in size, built of one course of brickwork on edge. The space between this and the safety lining was filled with concrete made one part Portland cement, two parts sand and four parts crushed trap rock, pea size. The inside of the sewer was given two coats of neat Portland cement wash, applied with brush. About 300 feet of this lining have been put in, leaving over 1,100 feet to be put in during the coming winter. The detail of this construction can be studied from Cut M.



CUT L.—SECTION OF DRIFT SHOWING LINING RINGS AND BULKHEAD.





CUT M.—SECTION OF PNEUMATIC TUNNEL SHOWING SAFETY LINING AND FINISHED SEWER, WITH CONCRETE BETWEEN THE TWO.

### THE AKRON RIOT.

STORY AS TOLD BY MAYOR YOUNG—  
PRESS REPORTS MISLEADING—  
LEADERS OF MOB TO BE  
PUNISHED.

At the request of the editor of "City Government," Mayor Young gives a full statement of the facts surrounding the late disgraceful riot in his city. He writes:

I take pleasure in making a brief statement of the Akron affair, and I am all the more willing to do so since perusing the September number of your valuable magazine.

Your comment under the heading, "Akron's Disgrace," while no doubt unintentionally so, was, nevertheless, misleading and unfair. I am satisfied that it was not your intention to do the City of Akron an injustice and that you believed, that what you said concerning it was true. You, however, were not familiar with all the facts. You are correct when you say that Akron was disgraced by the disreputable citizens who composed the mob, but when you speak of the "ineffi-

ciency of the police force, the cowardly action of the authorities in railroading the criminal to prison, and the great mistake made by the authorities in not announcing to the press the fact that the prisoner was to be taken away from the city," you misapprehended the situation entirely.

The facts are these: On Monday evening, August 20th, Louis Peck, a mulatto about 35 years of age, who had resided in Akron about six months and was employed as a porter at one of our local restaurants, secured a livery rig, representing that it was for the use of his employer, and drove about a mile from the city. Just after dusk he met a little six-year-old girl. By giving her some candy and offering her other rewards he induced her to get into the buggy with him. He then drove north about two miles, to a secluded spot, outraged the little girl several times. Leaving her lying in the bushes he drove the rig back to the barn and within an hour or two thereafter left the city.

The little girl by her screams and moans made her presence known, after her assailant had left, to a man who lived near the scene of the outrage and happened to be passing that way.

The man immediately communicated the facts to the authorities at police headquarters. The only description the little girl was able to give of her assailant was that he was a colored man and had a horse and buggy. Within an hour after the police received this information they were on the negro's track. A thorough search was made continuing through the night and the next day, and officers were sent to Cleveland to make search there. On the following night about 11 o'clock Peck was arrested at the union depot by Officer Duffy, just as he was alighting from a B. & O. passenger train. By the next morning Officer Washer, assisted by other members of the force, had secured from Peck a complete confession. At 9 o'clock he was arraigned in police court, entered a plea of guilty and was thence bound over to the Court of Common Pleas to await the action of the grand jury.

I immediately sent for the Sheriff and Prosecuting Attorney of the county and informed them that we wanted the prisoner off our hands at once as we were not prepared, in the event of trouble, to defend him. The sheriff agreed to remove him to the county jail at 3 o'clock that afternoon at which hour, of course, he could cease to be the city's prisoner and the city authorities would become in no way responsible for his safety. Later on the sheriff, no doubt hearing that there was considerable talk of organizing a mob to lynch the wretch that night, decided that the safest plan would be to remove him from the city.

I went to Cleveland that afternoon myself, returning about 7:35. Walking from the depot to the business center, I met several parties who laughingly remarked that it was a good thing that Peck had been gotten out of town or else there would have been trouble. It seemed to be generally known that he had been taken away. On reaching the city building I found a crowd of from 800 to 1,000 people collected around it. In the building, besides a few spectators, were Commissioner McMillen, who is chairman of the police committee of the Board of City Commissioners, and the two night men having charge of the automobile patrol. One of these men, Mr. Wilson, was at the time of my arrival at the building engaged in showing a committee of six persons selected by the crowd, through the building for the purpose of convincing them that the negro was not there.

After the committee finished its search it was announced to the crowd that they had been unable to discover the negro for whom they were seeking. Some one in the crowd yelled, "did they show you through the dungeon?" There was no dungeon in the building, but this cry was taken up by different persons and it was soon thoroughly circulated that the committee had been refused access to the dungeon.

I had made inquiry as to the whereabouts of Chief of Police Harrison and prison-keeper Washer, finding that the Chief had not been at the city building since supper and that Washer had gone three miles south of town to a "fish fry." I sent for the Chief to come to the city building at once. I then addressed the crowd, telling them the negro had been taken away by the sheriff at 4:30, and that if they were determined to lynch him it would be necessary to postpone the matter until some later day, as he was not here; that in any event it would be necessary to return him to Akron, after being indicted by the grand jury, for arraignment, and if then they felt that justice could be obtained in no other way

than by taking the law into their own hands they could do so at that time.

The crowd continued, to increase in numbers being augmented by a delegation that had been up to the county jail. It still remained good natured, however, and no one anticipated any particular trouble. As new recruits joined the crowd the demand for a second search of the city building became more and more persistent. A consultation was held by those inside the building and another committee was permitted to go through again. This decision was made after it had been learned that not only were there no reserve police in the building, but that there was not an ounce of ammunition except that carried by the policemen on their persons, nor were there any reserve guns, so that if the crowd had attempted to gain entrance into the building it would have been the height of folly to resist them.

This second committee was piloted through the building by Officer Wilson, shortly after 9 o'clock. It examined every room, cell, nook, crevice and corner in the building and it even sent one of its members up on the roof. While making the investigation the Chief of Police arrived. He immediately ordered every officer to report at the city building. Then the committee announced to the crowd that Peck was not in the building. About the same time representatives from each of the three local newspapers came to the building with information that a telegram or telephone message had been received from Cleveland to the effect that Sheriff Kelly had arrived there with Peck and that he was at that time confined in the Cuyahoga county jail. This was also announced to the crowd. The crowd refused, however, to be convinced.

While there were about 4,000 people in the streets immediately adjacent to the building the real mob consisted of but several hundred. The leaders, with few exceptions, were ex-convicts, jail-birds and persons of the most disruptable character. They were, however, receiving aid from the more respectable element.

I had been standing at the front entrance of the building in company with two police officers and had been holding the crowd back for nearly an hour, when I was relieved by five or six officers who had been called in. They took their places at the door. I walked into the police headquarters, a room in the front of the building, and sat down at a table near one of the front windows. I soon heard a crash and, running to the front entrance, found the crowd had secured a ladder and was using this as a battering ram.

Then the crowd began to throw stones and bricks at the officers guarding the entrance, several of them being struck. Without orders some officer pulled a revolver and began to fire. Several others followed suit; and quicker than I can tell it, a pitched battle between the crowd and the officers was on.

Within five minutes from the time the first shot was fired every window in the city building, with the possible exception of two or three, was broken. Some of the crowd began firing at the building. I called up the central engine house and asked them to send a man on horse back at once to the captains of both our military companies, with an order to get their men out and disperse the mob.

Shortly after this it was discovered that the officers had exhausted their supply of ammunition and Officer Kempel was detailed to get out of the building and secure some more. Commissioner McMill-

len and I went with him; the officer going direct to the residence of one of our hardware men, Mr. McMillen and I to the residence of Captain Werner, to ascertain if he had received my message. We found that he had left about an hour before saying, to one of his neighbors, that within a half hour he would disperse the mob.

Mr. McMillen and I then went to our respective homes. On reaching my residence I immediately called up the Chief of Police and found that no help had yet arrived.

Just after this, Probate Judge Anderson arrived at my house. We learned by arrived at my house. We learned by telephone from the "Daily Democrat," that the mob had broken into the standard hardware store and was looting it of guns and ammunition; also that Columbia Hall, adjoining the city building, was on fire.

On the advice of Judge Anderson I decided to communicate with the Governor and ask for immediate aid.

Then I called up the police departments in Canton and Cleveland and asked them to notify the captains of the military companies to get out their men and have them in readiness for Governor Nash's orders. I also made arrangements with the Valley Railroad for transportation for the soldiers. Not having received any response to my telegram I called up the Governor by telephone. He informed me that my message had been received and that he had ordered the Fourth Regiment, then in camp near Columbus, to break camp and march at once to the railroad station; that he was arranging with the railroad authorities for the transportation of the regiment to Akron. Captain Fisher, Eighth O. V. I., of Canton, called me up saying, his men would be ready in an hour's time. It was then about 3 o'clock. I again communicated with Governor Nash, requesting him to order the Canton people to come to Akron at once. Before this, however, I had received word that the mob had secured dynamite and had blown out the front entrance of the city building and had set it on fire; that the police officers and the prisoners confined in the city jail had probably escaped.

The Canton company arrived in Akron the next morning at 6.30 and the Columbus regiment at 9 o'clock. From that time until the following Monday morning the business district was thoroughly patrolled by the soldiers and there was no further attempt at violence.

It was learned Thursday evening that Peck had made a further confession to several of the Cleveland officers. Friday morning the city, county and military authorities held a consultation. It was then decided, in view of what had already taken place, it would be the utmost folly to attempt to bring Peck back to Akron at a later date without first calling out the militia in order to protect the prisoner and public property, from violence. As this would entail an additional expense of from \$5,000 to \$10,000 it was thought best, in the event Peck was willing to enter a plea of guilty, to call a special grand jury at once; have him indicted, bring him to Akron; let him appear before one of our Common Pleas Judges; enter his plea of guilty; receive his sentence and take him at once to the penitentiary, while we had the militia with us. This plan was carried out. There was not a respectable citizen in our city who, when he learned what had been done, hesitated to sanction it. I have not heard a single criticism by any member of the Akron Bar.

Your criticism of the inefficiency of the police force so far as numbers are concerned is just; but I can say without fear of contradiction that, as a whole, no braver or more energetic police officers ever lived than those of the City of Akron. Our entire force, including chief, detective, four signal operators, and two wagon men is composed of 36 members, 23 of whom do actual patrol duty. According to the last census we have a population of about 43,000 and we cover a territory sufficient for a city of 150,000. It is true we have practiced the false economy condemned by our grandmothers in the saying, "some people save mothers in the saying, "some people saved at the spigot and let the balance of the barrel run out at the bung-hole." An all-wise legislature has seen fit to limit our tax rate for general purposes to nine mills.

However much we may favor the increase of our police force, it cannot be done without money.

Let me say another thing on the subject of Akron and Summit County's disgrace. It is true that for an hour or two mob rule prevailed. No lynching, however, took place, and the officers did not flee from their posts of duty until there was no other choice left them except that of being burned alive. Furthermore, the authorities of Akron and Summit County are making a determined effort to bring the leaders and perpetrators of this dastardly work to justice, and they will succeed.

#### MUNICIPAL ELECTRICIANS.

##### IMPORTANT WING OF THE FIRE AND POLICE SERVICE IN COUNCIL—LARGEST MEETING IN HISTORY OF ORGANIZATION.

The International Association of Municipal Electricians met in its fifth annual convention, at Pittsburg, (Pa.) last month. The attendance reached the highest mark yet attained by the association. The importance of the subjects discussed and the interest manifested in the carrying out of the program augurs well for the future prosperity of the association.

In the matter of entertainment it is safe to say that, the effort made in this direction, under the leadership of Superintendent, Morris W. Mead, has never been equalled in the history of the association. It is a record which will be difficult to excel at future gatherings.

Several of the papers read at this convention are published in this number.

Niagara Falls was chosen as the place of meeting for 1901, which will give all delegates an opportunity of visiting the Pan American Exposition while enjoying the greatest natural wonder in the world. The following officers were elected:

Morris W. Mead, Superintendent of the Bureau of Electricity of Pittsburg, president; first vice president, J. F. Zelleuff, Paterson, N. J.; second vice president, Benjamin McAllister, Bradford, Penn.; third vice president, R. E. Moan, Memphis, Tenn.; secretary, M. P. Foster, Corning, N. Y.; treasurer, Adam Bosch, Newark, N. J.; executive committee, M. J. Donahoe, Niagara Falls; William Brophy, Boston; J. W. Aydon, Wilmington, Del.; F. E. Mason, Brooklyn; F. G. Boyd, Baltimore; W. Y. Ellett, Elmira, N. Y.; G. F. McDonald, Ottawa, Canada; M. G. Canfield, Grand Rapids, Mich., and C. F. Michaels, Peoria, Ill. The office of financial secretary was abolished.



## ELECTRICAL CONTACTS.\*

By F. C. Mason, Superintendent Police Telegraph, Brooklyn, N. Y.

It is curious that the subject of electrical contacts has received so little attention in the literature and discussions of the general subject of electrical application. At the basis of nearly every variety of electrical apparatus, whether for signaling with small currents, or for the larger work of heating, lighting, generating and developing electric power and the application of electricity to chemical processes, the contact or point of discontinuity in the circuit is found as an essential part of the apparatus or of the method.

It is well, at this point, to say that this paper will be limited to those uses of electricity employing relatively small currents, as in telephony, telegraphy and signaling, and will not touch on the larger field that its subject embraces in the utilization of heavy currents. However, the line of demarcation between the light current and the heavy current is now by no means so sharply drawn as it was in the days when the primary battery, in one form or another, was the sole dependence of the telephone and telegraph engineer. When we see the dynamotor and the storage battery used as the central source of energy for a telegraph, fire-alarm and telephone system, we naturally wonder for how long we can speak of the light current applications of electricity as a distinction from those employing large and powerful currents generated by dynamos.

Contacts may be roughly grouped into three classes: Those who are intended to be permanent, such as joints in wire and cables; those that are semi-permanent, such as contact between wire and binding-posts; and operative contacts or those that are intended to be opened and closed at will, as in keys, switches, etc.

To all these kinds of junctions, two enemies constantly tend to destroy efficient electrical contact—chemical action and dirt. It is scarcely necessary to speak of mechanical strains, which are guarded against naturally by the exercise of common sense. Chemical action, as it applies to contacts, is generally due to the remnants of some compound or chemical used in soldering, and to the action of air and moisture—either singly or in conjunction—producing oxidation of the surfaces in contact. This action is enormously enhanced by the formation of sparks at contacts of the operative kind, the resultant film of oxide being generally a non-conductor and interfering greatly with the operation of the contact. "Dirt," as Emercon says, "is matter out of place." In electrical work, dirt means any non-conducting substance that interferes with good electrical contact. It is often dust, but, in operative contacts is more frequently the products of oxidation of the points of contact themselves, where, as is too often the case, these are of the baser and more oxidizable metals.

Permanent joints, or contacts, are used both in line conductors and in instruments. Nowadays, the general introduction of hard-drawn copper wire for overhead line work, has reduced practice in this kind of jointure to a question of the best way to handle that material. Experience has shown that soldering such joints draws the temper of the wire, making a joint of mechanical weakness, while the ancient habit of linemen, of twisting

the wire at the point into tight spirals, leads to the same result. For these reasons, the twisted and soldered joint must necessarily give way to one of the various and excellent types of tubular joint now manufactured for the purpose. In cable work especially, where paper insulation is used, the best practice now, strangely enough, is to use merely the twisted joint without solder. The wire being soft and subject to no strains, the joint is abundantly strong; while its sheathing, after jointing, fully protects it from the harmful action of the atmosphere and moisture. To solder such a joint, would merely add the danger of corrosion from the dissolving action and slow electrolysis of the fluxes used.

Permanent joints, in switchboards and instruments, being protected from the weather, are generally soldered. The wires used should be tinned, so as to leave no excuse for the use of the mischief-making chemicals sold as "soldering solutions." Tubular solder, having resin or stearine flux in its hollow part should be used, and the utmost watchfulness employed to keep acid and "salts" away from the work. One easy joint made by these means may plant the seeds of trouble to be reaped later and, by the peculiar provision of fate, almost invariably just when trouble or break-down is most to be feared.

Semi-permanent contacts are, practically, of only two kinds—binding-posts and fuses. The average American binding-post is a piece of metal with a hole drilled through to receive the wire and another drilled and tapped to receive a set screw, which may or may not have a pointed end. The design of this type of binding-post is utterly vicious. The screw may shear the wire nearly in two, leaving it so that the slightest strain will break it off or, it may not come down to a tight bearing on the wire, leaving a loose joint ready to collect dirt and become inoperative. Much the better type is that variety of binding-post in which the wire is firmly held between two flat surfaces, thus ensuring a large area of contact, and which is provided with a lock-nut, so as to avoid any danger of the binding washer working loose. In instruments having binding-posts of the other type, considerable improvement can be introduced by putting small hexagonal nuts a little larger than the driving heads of the binding screws on the latter, and setting them down firmly on the top of the post to act as lock-nuts.

In fuses, which are an absolutely necessary part of any installation in a modern city, traversed by electric light and railway conductors, an excellent opportunity for bad contacts presents itself. The practice of securing the fuse-wire under a washer or the head of a screw is very bad; as the wire is strained, is apt to be reduced in section at some point, and cold flow of the fuse may take place. To obviate these troubles, it is usual to attach pieces of copper to the ends of the fuse-wire, screwing these down tightly under the binding washers. If the fuse, as is too often the case, is merely squeezed into the copper end, the trouble is only transferred to another point. Hence, the best solution of the fuse difficulty is to use copper lugs, to which the fusible wire is securely soldered, held down by screws provided with lock-nuts. Care should be taken in installing fuses not to set them in place under strain, as their expansion and contraction under temperature changes, produces crystallization of the metal or reduction of its cross-section at some point.

While the two classes of contacts already referred to, are, in a large measure, in the hands of the operating force of a fire-alarm, telegraph or telephone installation, the third class, and the most important of all to us—the working contacts of instruments—are confined to these structures and their nature is determined by the manufacturer. In keys, relays, vibrating gongs, the switching apparatus of the telephone station, and in all other places where signaling circuits must be made and broken, sparks will be formed, and no practical device known to the art can prevent their formation. While dust, always inimical to good contacts, can be excluded from such places by proper construction of the instrument, nothing will prevent the formation of oxides at the point of sparking, which is also the point of contact, except making these points of some material that will not oxidize.

For this purpose, the only substances known, that are at the same time good conductors of electricity and possess the necessary qualities of mechanical strength, are platinum and a few other of the rarer metals, such as iridium and gold. The consensus of opinion and experience has shown platinum, or certain of its alloys, to be the only substance commercially available for the construction of contact points of this character. Unfortunately, platinum is a material of such great value, that the expense of such contacts is greater than that of any other kind, and therefore, the temptation of the manufacturer to replace such contacts with those of cheaper material, or to stint the size, has been very great, and too often he has fallen before it. He has introduced contact points of the baser metals in his instruments and this has far too often invited, if not assured, disaster.

Blame for such substitution of such cheap contacts cannot rest entirely upon the manufacturer so long as the users of electric signaling apparatus fail to recognize the value of the higher-priced article, or, recognizing it, fail to specify its use when awarding contracts, and to see that this vitally important detail has been honestly and intelligently executed in the completed instruments.

Pure platinum is a very soft metal and therefore, is not as serviceable for contacts subject to mechanical blows as certain alloys of the metal with other members of the platinum group of metals. The production of platinum alloys specially adapted for contact under all conditions of current density and temperature, has been very carefully investigated by Baker & Co., the Platinum Refiners of Newark, New Jersey, who now regularly manufacture a number of alloys possessing all the requisite properties for durable and perfect contacts. Their XXV brand is especially designed for use in electric signaling apparatus, and is now generally specified in awarding contracts for high grade instruments.

For commercial reasons, the composition of this and their other alloys is kept secret; but as to the operative value of contacts made from these alloys, I can say, from personal observation, that too much credit cannot be awarded this firm for its conscientious efforts to produce an article so vitally important to the certain operation of signaling apparatus and which fully meets our exacting requirements.

In municipal work, more than in any other, the electrical equipment must be absolutely reliable. A bad contact, sticking together or full of oxides, may mean

\*Read before the fifth annual convention of the International Association of Municipal Electricians at Pittsburg, Pa., Sept. 25 to 27, 1900.

loss and danger of the gravest sort to the community. Through failure of the fire apparatus to respond to an alarm, or of the ambulance to answer its call, or of the police to appear promptly when summoned, a bad contact may exact a fearful toll in conflagration, or death or riot. And, in the saving of a few cents worth of platinum, the vast expenditures of municipalities for fire and police protection, and of the generous public for hospitals, may be nullified. There is no room for economy of this wasteful kind, in instruments upon which so much depends and to which, owing to the careful and conscientious superintendence of the members of this Association the public looks with perfect confidence for perfect results.

### **Trials and Troubles of Instituting and Enforcing Municipal Inspection and Control.\***

By M. G. Canfield, Supt. Police and Fire and Municipal Inspection, Grand Rapids, Mich.

The topic assigned to me for this meeting is one that is always before us. It is not possible for us to give too much time and careful study to the many and varied conditions that are continually presenting themselves. The rapid strides made in electrical work in the last eight or 10 years—especially, construction methods, not alone in material, but in the way of doing the work—is far greater than in any other branch of business. It is, therefore, necessary for us, if we expect to succeed in our profession, to devote a great deal of time and some money to fitting ourselves to keep pace with the new applications of old methods and a great many new ones that are developed from time to time.

In commencing municipal inspection, the city Council passes an ordinance to give legal authority to the person designated to promulgate a set of rules and regulations that will protect all interests alike; and to my mind there is no set of rules that covers this work as well as the national Electrical code as far as it goes, but it does not go far enough for our purposes. We are as much interested in the safety and protection to life as we are to property and for this reason it is necessary for us to formulate rules to regulate what may be termed outside work, so that with ordinary precaution the lives of linemen, firemen and others are protected as much as possible.

There is another matter that is worthy of considerable thought by municipal inspectors, and that is, who shall and who shall not do electrical work on his own responsibility. It should not be the desire of any one to place obstacles in the way of a man to earn an honest dollar when he can; neither is it good policy to allow school boys and a floating element that is always with us (except when we want to find them) to do electrical construction. As a remedy for this evil I am very much in favor of making it necessary for a company or person doing electrical work to be licensed and give a bond of, say \$1,000 to protect the license. There should be no fee attached to the license to make it a hardship for a competent man to earn a living, and there is no question but what any competent and respectable man could obtain two sureties on a bond to protect a license. If this policy is carried out, much time will be saved by the inspector.

\*Read before the fifth annual convention of the International Municipal Electricians, at Pittsburgh, Pa., Sept. 25 to 27, 1900.—[Editor.]

We now arrive at a period when the inspector starts out to do business. And before speaking of his difficulties, I wish to say a few words in regard to him.

The nature of his work makes it a necessity for him to examine the work of all alike. It is not to be expected that he is infallible; but if he is honest in his opinions and makes a report of the exact conditions as he sees them—and the competent inspector does not take anybody's word, but sees for himself—when he does this, there is no one to find fault with him except people who want to do work and use material that they know, or at least should know, would not make good construction.

We all know it is impossible to compile and have printed a set of rules that will always apply to some particular work or some conditions that will very materially change the fittings, wires and the way the work should be done. Municipal inspection, like almost all city improvements, meets its greatest opposition during the first year of its existence. I do not mean to say that the time will ever come when we will not meet with people who will say they have a right to have their work done as they want it, regardless of any city ordinance. We meet people very often that would sit up late nights to protest against a powder mill being installed and operated next door to their store or residence, but these same people very often think that we are interfering with their private business if we tell them they cannot run weather-proof wire on the joist between the floor and ceiling so that rats or moisture will form a short circuit and set fire to their buildings, and generally at a time when there is no person around to put it out.

One of the most difficult things to handle, especially during the first year of the ordinance, is to have old equipments remodeled to increase the safety of the equipment against fire and accident, and by the change the consumer saves many dollars from wasted current caused by leakage.

One of the first things people will say when you speak about substituting porcelain knobs for wood cleats, and many other things just as bad, is, "Why, we have used that for 10 years or more, and we never had any trouble with it."

It would be taking too much time to dwell on this matter, but I cannot refrain from giving one example. The place was a large (for our town) store. A high potential arc circuit that furnished light in several blocks, both inside and outside lights. In this particular store there were six lights in different parts of the store and the wire for the store was No. 8 cotton magnet wire, held to the ceiling by a strip of soft pine moulding. I was informed by the manager of the store that they had used that same equipment for 12 years and never had any trouble with it. I informed him that 16 years ago, when I commenced electric light work, that kind of construction was all right because we did not know better; but we have learned by experience that the construction methods of those days were unsafe and dangerous and have gone by, wood, fuse, blocks and all, never to come back.

One of the best object lessons for a man that says his old equipment is all right, is to show him a single-pole, 75-ampere fuse-block that we use to-day, and at the same time one that was used very generally 15 years ago, and your change in equipment follows very soon.

I do not favor the idea of a municipal inspector posing as a bureau of informa-

tion, but he should give a lucid reason for what he asks to have done.

To control these matters as they occur from day to day, we cannot pay too much attention to the many details connected with it. When a ruling is made on some form of construction, a copy of the same should be placed on file in the office, for reference, so that one contractor cannot say that you favor one more than another. The inspector should have a record of the number of times he goes to see each equipment, and the date of each visit, together with a summary of the condition of the installation—in fact, the ideal office should be able to furnish any information desired in reference to the condition of any equipment in the city in about five minutes.

### **THE CENSUS OF 1900.**

The cities already counted by the census collectors show the following results:

Cities.	1900.	Actual Increase	Percentage of Increase.
New York City—			
Manhattan .....	1,850,093	408,877	28.38
Brooklyn .....	1,166,582	328,035	39.14
Bronx .....	200,507	112,422	127.84
Queens .....	152,999	65,775	75.34
Richmond .....	67,021	15,328	29.65
Totals .....	3,437,202	930,437	37.15
Akron, Ohio .....	42,728	15,127	34.81
Albany .....	94,151	*772	*.81
Allegheny, Pa. ....	129,896	24,689	23.37
Allentown, Pa. ....	35,416	10,188	40.38
Altoona, Pa. ....	38,973	8,636	28.47
Atlanta .....	89,872	24,339	37.14
Atlantic City .....	27,838	14,783	113.24
Auburn, N. Y. ....	30,345	4,487	17.35
Augusta .....	39,441	6,141	18.44
Baltimore .....	508,957	74,518	17.15
Bay City, Mich. ....	27,628	*211	.76
Bayonne, N. J. ....	32,722	13,689	71.92
Binghamton .....	39,047	4,642	13.26
Birmingham, Ala. ...	38,415	12,237	46.75
Boston .....	560,892	112,415	25.07
Bridgeport .....	70,996	22,130	45.29
Brockton, Mass. ....	40,063	12,769	46.78
Buffalo .....	352,219	96,555	37.77
Butte, Mont. ....	30,470	19,747	189.16
Cambridge, Mass. ...	91,886	21,858	31.21
Camden, N. J. ....	75,935	17,622	30.22
Canton, Ohio .....	30,667	4,478	17.10
Charleston, S. C. ....	55,807	852	1.55
Chicago .....	1,698,575	598,725	54.44
Cincinnati .....	325,902	28,184	9.77
Cleveland .....	381,768	120,415	46.07
Columbus .....	125,560	37,410	42.41
Covington .....	42,938	5,567	14.90
Davenport, Iowa ..	35,254	8,382	31.19
Dayton .....	85,233	24,113	39.39
Denver .....	133,859	26,146	25.44
Des Moines .....	62,139	12,046	24.05
Detroit .....	285,704	79,828	38.77
District of Columbia	78,718	48,326	20.98
Duluth .....	52,969	11,854	59.95
Easton, Pa. ....	25,238	10,757	74.28
East St. Louis, Ill. ...	29,655	14,486	95.50
Elizabeth .....	52,130	14,366	38.04
Elmira, N. Y. ....	35,672	4,779	15.47
Erie .....	52,733	12,099	29.78
Evansville, Ind. ....	59,007	8,251	16.26
Fort Wayne, Ind. ....	45,115	9,722	27.47
Galveston, Texas ..	37,789	8,705	29.93
Grand Rapids .....	87,565	27,287	45.27
Harrisburg, Pa. ....	50,167	10,782	27.38
Hartford .....	79,850	26,620	50.01
Hoboken .....	59,364	15,716	36.01
Indianapolis .....	169,164	63,728	60.44
Jacksonville .....	28,429	11,228	65.28
Kansas City, Kan. ...	51,418	13,102	34.19
Kansas City, Mo. ....	163,752	31,036	23.39
Jersey City .....	206,433	43,430	26.64
La Crosse, Wis. ....	28,895	3,805	15.17
Lancaster, Pa. ....	41,459	9,448	29.51
Lawrence, Mass. ....	62,559	17,905	40.10
Lexington, Ky. ....	26,369	4,802	22.27
Lincoln, Neb. ....	40,169	*14,985	*27.17
Louisville .....	204,731	43,602	27.06
McKeesport, Pa. ....	34,227	13,486	65.02
Manchester, N. H. ....	56,987	12,861	29.15
Milwaukee .....	285,315	80,829	39.54
Minneapolis .....	202,718	37,980	23.05
Mobile, Ala. ....	38,469	7,393	23.79
Nashville .....	80,865	4,697	6.17
Newark .....	246,070	64,240	35.33
New Bedford, Mass. ...	62,442	21,709	53.30
New Britain, Ct. ....	25,998	9,479	57.38
New Haven .....	108,027	26,729	32.88
New Orleans .....	287,104	45,065	13.62



Newport, Ky.....	28,301	3,383	13.58
Newton, Mass.....	33,587	9,208	37.77
Norfolk, Va.....	46,624	11,753	33.70
Oakland, Cal.....	66,960	18,278	37.55
Omaha.....	102,255	*37,897	*26.98
Oshkosh, Wis.....	28,284	5,448	23.86
Paterson, N. J.....	105,171	26,834	34.24
Pawtucket, R. I.....	39,231	11,598	41.70
Peoria.....	56,100	15,076	36.75
Philadelphia.....	1,293,697	246,733	23.57
Pittsburgh.....	321,616	82,999	34.78
Portland, Me.....	50,145	13,720	37.67
Portland, Ore.....	90,426	44,041	94.95
Providence.....	175,597	43,451	32.88
Pueblo, Col.....	28,157	3,599	14.56
Racine, Wis.....	29,102	8,088	38.49
Reading.....	78,961	20,300	34.61
Richmond.....	85,050	3,852	4.50
Rochester.....	162,435	28,539	21.31
St. Louis.....	575,238	123,467	27.33
S. Omaha, Neb.....	26,001	17,939	222.51
St. Paul.....	163,632	30,476	22.89
Sacramento, Cal.....	20,282	2,896	10.98
Salem, Mass.....	35,956	5,155	16.74
Salt Lake City.....	53,531	8,688	19.37
San Antonio, Tex.....	53,231	15,648	41.54
San Francisco.....	342,782	43,785	14.64
Scranton.....	102,066	26,811	35.65
Sioux City, Iowa.....	33,111	*4,695	*12.42
Somerville, Mass.....	61,643	21,491	53.52
Springfield, Mass.....	62,059	17,880	40.47
Superior City, Wis.....	31,091	19,108	159.46
Syracuse.....	108,374	20,231	22.95
Toledo.....	131,822	50,388	61.83
Topeka.....	33,608	2,601	8.39
Trenton.....	73,307	18,849	27.53
Utica, N. Y.....	56,383	12,376	28.12
Waterbury, Ct.....	45,859	17,213	60.90
Wilkes Barre, Pa.....	51,721	14,003	37.13
Williamsport, Pa.....	28,757	1,625	5.99
Wilmington, Del.....	76,508	15,077	24.54
Worcester.....	118,421	33,766	39.89
Yonkers, N. Y.....	47,931	15,898	49.63
York, Pa.....	33,654	12,861	61.85
Youngstown, Ohio.....	44,885	11,665	35.11

Totals ..... 17,773,815 4,065,612 31.45  
 \*Decrease.

#### PUBLIC PLAYGROUNDS.

##### STRONG REASONS FOR THEIR ESTABLISHMENT—WANTED IN SAN FRANCISCO—THEIR SUCCESS IN BOSTON.

By Miss Sadie American, of the Chicago Woman's Club.

Some years ago there was imported into the Eastern States from California, I think from San Francisco, an expression which in its way marked an epoch—the expression "hoodlum." It awakened curiosity, and when it was found to describe a certain type of youth better known for his powers of annoying his neighbors than for his good citizenship, it awakened the interest of thoughtful men and women. The genus was found to exist and thrive in other places. Investigation brought out the astounding fact that juvenile crime seemed to be increasing, but analysis proved that what was called crime on the part of the boy was often, in reality, the crime of ignorance, neglect or worse on the part of the men and city which stigmatized him as a criminal, arrested him and placed him in the hands of the police instead of putting him under the surveillance of one who could show him how to entertain himself in ways less destructive to the neighbor's comfort or property and to his own moral destruction.

For it has been conclusively proven that these so-called criminal acts are almost entirely the result of undirected energy, to say misdirected would put too much responsibility on the boy. It becomes destructive in its tendency instead of constructive, and only needs guidance to become a source of good instead of evil. Nature endows every normal youth with a fund of energy and spirits which must express itself, often demands expression in muscular action, and if it finds no outlet it explodes like any other force, as steam. Nature also endows the youth with vivid imagination which must be fed or it seeks its own feeding ground, and having little discrimination chooses poison often instead of food.

The public playground has been found to serve as the best means to upset these evils and to turn the "hoodlum" into a self-respecting and respected citizen, because it furnishes a healthy and legitimate outlet for the normal energies. Even in a city with so many gardens as San Francisco there is little or no place to play, especially for the thousands coming from working homes. Though there may be no tenements, a man occupies no more rooms than will house his family, and there is no place for quiet play for the youngster nor the youth, and certainly no space for those games which require energetic motion. The open spaces are small and not adopted to sports of any kind. Golden Gate Park is too far away for the majority.

The youth, therefore, have no recourse but the street. Older communities have discovered that the lack of proper playgrounds is a source of great expense and waste to the community, expense which runs the cost of the police system, including all penal and reformatory institutions, into millions, and waste of the energy and power which should go to making staunch citizens instead of strong criminals. In the report (1897) of the committee on small parks of New York of which Mr. Abram S. Hewitt was chairman, he says: "Improvements of property have left children no other opportunity for play than those that can be found in the streets. It is impossible to use these for games without incurring the interference of the police. A sense of hostility between the children and the guardians of public order is thus engendered, leading to the education of citizens who become enemies of law and order. \* \* \* With a common accord the precinct captains attribute juvenile rowdiness and turbulence to the lack of a better playground than the streets." Again "traffic of train and car cause many accidents to life and limb. \* \* \* London, after an experience of 40 years battling with the slums, says tersely: Crime in our large cities is to a great extent simply a question of athletics."

So New York proceeded to create small parks and playgrounds and has spent and is spending millions to undo what lack of foresight and commercial greed has done, and occupying every available bit of space. Wherever small parks are created, the verdict of the police is unanimous that they have changed the character of the neighborhood. The hoodlum instead of taking his necessary exercise in annoying passers-by or destroying property, takes it by games of various kinds or in using the gymnasium apparatus put up for him. That these statements are in no wise exaggerated can be easily proven by inquiry into the results of the establishment of such places as the Mulberry Bend Park in New York and the Hudson Bank Gymnasium which has transformed one of the worst criminal districts of that city. There the Out-door Recreation League has put up a complete open air gymnasium, and girls and boys, men and women, after a hard day's work come here to take the exercise and recreation they have no means nor knowledge even to furnish themselves, but which the rich take good care to provide for their own, as witness bicycle and ball games, golf clubs and gymnasia, tennis and other tournaments.

Have you ever thought what life would be without any and all of these means of recreation? Have you ever thought what they have meant in your own life? Try to picture it and you must be eager to provide similar means of renewing and toning up life for others. Why, the merest

selfishness would cause you to do so, because it would produce more and better work. So convinced have not only thinkers but men actively engaged in the world's work because of the necessity for this that in all our large cities steps are being taken to provide playgrounds and gymnasiums as rapidly as possible.

Boston has one model—the Charles Bank Gymnasium—and has purchased 10 tracts of land which it is fitting up as rapidly as possible. Philadelphia has an association whose special business it is to further the establishment of such grounds. Chicago has a recently appointed commission of aldermen and citizens which is selecting and purchasing sites for small parks and playgrounds. Space will not permit me to go on with the list, but 30 or 40 cities are actively at work on the problem and making provision for small children and large, for boys and girls alike. Nor is it sufficient to merely create open spaces. They must be adequately fitted with apparatus and should have a supervisor who can teach its use, encourage skill and make the turbulent element feel its ownership in the property. Thus it will soon come to use it properly and to desist from turbulence since it will find the use of the apparatus and the playing of active games much the more interesting.

San Francisco with a climate which makes possible to encourage outdoor life during the greater portion of the year has both a greater responsibility to supply adequate outdoor spaces which are the property of its citizens and a greater privilege in that its investment must be of greater value since it can be used almost twice as long as that in the less-favored Eastern cities.

Too little provision is made for the so-called bad boy who may be of much finer clay than his good brother—the cart horse is less restive than his high-bred brother and far less apt to take the bit in his teeth and run. We must provide for him according if we have wit or wisdom.

It would, therefore, appear that in the interest of good citizenship and of economy in morals and even,—what seems of greater importance to some—of economy in money, that one of the most necessary steps to be taken in our commonwealth is to establish such playgrounds and outdoor gymnasiums as may compete in their attractions with the many temptations of the street. The child is father to the man and the street is no place of rest nor refuge for one or the other in his leisure moments. May the wise see to it that resorts for upbuilding recreation take the place of our present lack of them, places that shall insure such occupations of leisure hours and such outlet for youthful energy and animal spirits that we shall produce a generation strong and joyous and fortified to resist and repel with a happy laugh every deteriorating temptation and tendency.—"Merchants' Association Review," San Francisco.

#### HITCHING TO TREES NOT ALLOWED

New Haven, (Conn.) has an ordinance which prohibits the fastening of horses or other animals to shade trees. It is as follows:

"Every person who shall fasten any horse or other animal to any shade tree in any street or who shall place or leave any horse or other animal in such a manner that it may injure any such shade tree shall forfeit and pay a penalty of not less than \$2 nor more than \$50 for every such offense."

# PUBLIC SAFETY.

## Fire.



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PRESIDENT JAMES P. QUIGLEY,  
Chief of Syracuse Fire Department.



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HISTORIC CITY OF CHARLESTON—  
GREAT PREPARATIONS FOR EN-  
TERTAINMENT—LARGEST  
GATHERING IN ITS  
HISTORY.

The twenty-eighth annual convention of the International Association of Fire Engineers, will be held at Charleston, S. C., October 9th, 10th, 11th and 12th, 1900. Mayor J. Adger Smyth has co-operated with Chief Marjenhoff in the arrangement of a rich program of entertainment for the visiting delegates and their friends. The Mayor sends the following cordial invitation:

"It gives me real pleasure to extend most cordial greetings and hearty welcomes from the citizens of Charleston to each and every member of your convention about to assemble in this ancient city.

"We trust that you will arrange to remain with us as long as possible and to come again and see us often."

The Fire Department of Charleston, in administration and equipment, is excelled by none and equalled by few cities in the entire Southland. Chief Marjenhoff is thoroughly up-to-date in his ideas about fire fighting and always has the best that the appropriation will afford. It was at his suggestion that his Assistant Chief, Louis Behrens, was sent to New York a few months ago to take the course in the training school of the Life Saving Corps in that city, in order that a similar corps might be added to the Charleston department.

The Fire Department is under the control of seven fire masters, as they are called. The present board consists of: F. S. Rodgers, chairman, appointed in 1881; Hon. J. Adger Smyth, Mayor; C. R. Valk, 1881; A. Stemmermann, 1881; A. J.

Riley, 1896; R. M. Masters, 1898; W. K. Steadman, 1898.

The force consists of 99 officers and men, 46 of whom are paid for full time, and 53 are paid part time, men at call, assigned to different stations. There are seven steamer companies, one truck company and an adequate equipment of reserve apparatus. During the last 10 years the average fire loss has been kept to about \$48,000.

The annual running expenses amount to about \$48,000.

There is an up-to-date fire alarm telegraph with 38 miles of line wire divided into six circuits. The system consists of a six-circuit repeater, 103 signal boxes, three large bell strikes, 16 gongs and two indicators attached to the lines. For the last eight years there has been no failure in giving alarms for fires, and it has been kept with such care that over 99 per cent. of the fire alarms have been correctly given during that period.

## DELAWARE, LACKAWANA AND WESTERN RAILROAD.

If you are thinking of visiting the West in October, take the Delaware, Lackawana and Western road from New York to Buffalo.

The Pullman service is thoroughly up-to-date in point of luxury, comfort and convenience.

The scenery is acknowledged to be unsurpassed along any road in America, and can be enjoyed without the usual smoke and dust, as the engines burn hard coal and the road bed is stone ballasted.

All meals are served a-la-carte, and cannot be excelled.

For full information write or call on T. W. Lee, Gen. Passenger Agent, 26 Exchange Place, New York.



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CHIEF MARJENHOFF,  
of Charleston Fire Department.





HON. J. ADGER SMITH, MAYOR OF CHARLESTON.

## IDEAS OF SOME LEADING CHIEFS.

The need of a salvage corps in all large cities seems to be generally recognized by the leading chiefs. There are some of the smaller cities that aspire in that direction. The use of rubber tires and roller bearings continues to grow in favor. Even the small departments are having new apparatus fitted with them. The chemical engine is looked upon by all as an indispensable part of the equipment of the modern fire department.

The leading chiefs of the United States still continue to send in their opinions upon these subjects and "City Government" is glad to make use of them. They are exciting much attention all over the country and the daily press is taking up the question of better fire equipment.

## CHIEF LEMOIN, GRAND RAPIDS, MICH.

"We have no salvage corps in our city.

"Certainly, I approve of the chemical engine. In proportion as it is well managed, it is a great help in the extinguishment of small fires and in the saving of property in large ones.

"As to rubber tires, we are not using them and I am therefore not able to speak of their utility from the standpoint of experience.

"As to a life saving corps, training school, etc., our entire department could be classed under this head. Our men are drilled in all branches of this work, and have in the past, and no doubt would in the future, be efficient in these directions. I find it necessary and wise to drill even the old men along these lines, as well as to teach and instruct the new ones."

## CHIEF MULLIN, BIRMINGHAM, ALA.

"We have no salvage corps. The city is hardly large enough. I am heartily in favor of it, however, when the city is large enough.

"I use rubber tires on my buggy, but not on fire apparatus. I have used them on the buggy for 10 years. I like them

very much. They save 50 per cent. in wear and tear.

"We have no life saving corps or training school."

## CHIEF McALLISTER, CALAIS, ME.

"(1) We have no salvage corps connected with our department. But I strongly approve of such an addition to a fire fighting force, and am only prevented from having such a corps, by the lack of funds appropriated for fire purposes. As an auxiliary force, for protecting the contents of buildings from water damage, and loss from theft, and in removing stocks, and contents of buildings, with dispatch, and in the best condition, I think a salvage corps is of distinct advantage, and would gladly add such to this department, if circumstances permitted. In the near future I am in hopes of doing this.

"(2) We have one hose wagon, fitted with "Archibald" roller bearings, and we are much pleased with them. We

shall continue to use them on all future apparatus. We have no rubber tires in use.

"(3) We have no training school, our city not being large enough to warrant it."

## CHIEF O'CONNELL, HELENA, MONT.

"(1) I am very sorry to say we have no salvage corps at present. We had one some years ago, but since then the city saw fit to cut down the department appropriation and the salvage corps had to go. I fully approve of the same and think all cities should have salvage corps.

"(2) We do not use rubber tires or roller bearings on our apparatus, but I am in favor of them, and they should be on all fire apparatus.

"(3) We have no life saving corps, nor training school, but I think both are first class auxiliary to departments and should be in use in all cities."

## CHIEF BURRUS, COLUMBUS, GA.

"(1) We have no salvage corps, but I think it advisable for all cities, that can afford it, to have one. And where they cannot, to have at least some of their men trained for such service and have a limited supply of covers on hand—say a half dozen or so, for the protection of goods in stores and furniture, etc., in residences, especially when the fire is in the roof, or top floors. We formerly had four covers in volunteer days and they were used to great advantage.

"(2) We have no rubber tires. A hose wagon was placed in service this year with ball bearings, one wheel of which caused us some trouble by coming off on three occasions; but fortunately not on a run. We had a new set of screws put in and since then it has given the best of satisfaction and is a great improvement over the old style. They are horse savers as the draft is reduced about half.

"(3) We have no life saving corps, nor training school, and from present indications the next time you hear from me things will be in the same fix. In my plans for a new house, built last year, I arranged for a gymnasium. The room is all right, but the apparatus is not in sight."



CITY HALL OF CHARLESTON.

## CHIEF JOYNER, ATLANTA, GA.

"First. We have no salvage corps in this city. The three hook and ladder companies are equipped with tarpaulins, buckets, tubs, brooms, etc., and do a great deal of work that is usually done by salvage corps. I find that it is a great saving in the way of damage to property by water, rubbish, etc. We usually clean out a building as well as possible after a fire has been extinguished. The water damage in this city is so small that the insurance people do not think it advisable to put in a salvage corps.

"Second. I use rubber tires on my buggy. Some of the apparatus has roller bearings. I hope in the near future to give the rubber tires a trial on some of the heavier apparatus. I am well pleased with the roller bearings so far.

"Third. We have in this department what may be termed, a life saving corps and training school. We have a five-story frame building in the rear of headquarters where the men go through a regular practice with scaling ladders, ropes, etc., the same as is done in the larger cities. I am well pleased with the work as it is quite beneficial to the men, giving them confidence as well as benefitting them physically."

## CHIEF SPRING, DEFIANCE, O.

"(1) We have no salvage corps.

"(2) We have a ball bearing hook and ladder truck, but no rubber tires. I am well pleased with the ball bearings and think them a good thing.

"(3) We have no life saving corps or training school."

## CHIEF SPENCER, CHELSEA, MASS.

"We have no salvage corps connected with this department, as the size of the city and the annual loss does not warrant the expense. However, I am intending placing a few rubber covers on some of our apparatus as there are times when they may be the means of saving many times their cost.

"We have never used rubber tires and I do not know enough about them to express an opinion, but as to roller bearings I consider them a success, and I would not order another piece of apparatus without them.

"We have no training school, but the rules of the department require the captain of each company to take the recruit in hand and see that he is thoroughly instructed in the duties connected with his position, and we hold the captain responsible for the training. The experience gained by actual service is expected to do the rest."

## SOUTHERN RAILWAY.

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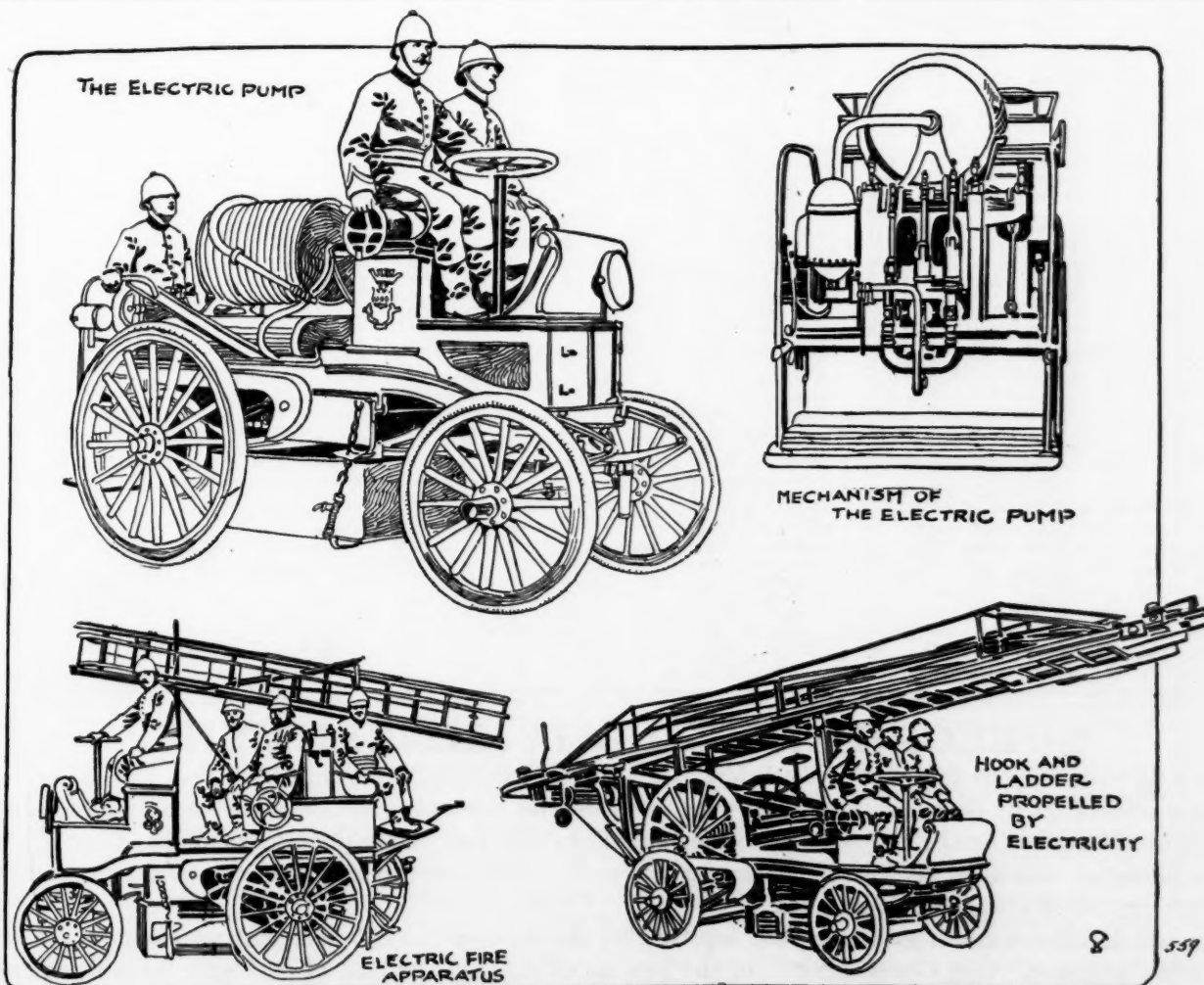
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## CHIEF JOYNER, ATLANTA, GA.

"First. We have no salvage corps in this city. The three hook and ladder companies are equipped with tarpaulins, buckets, tubs, brooms, etc., and do a great deal of work that is usually done by salvage corps. I find that it is a great saving in the way of damage to property by water, rubbish, etc. We usually clean out a building as well as possible after a fire has been extinguished. The water damage in this city is so small that the insurance people do not think it advisable to put in a salvage corps.

"Second. I use rubber tires on my buggy. Some of the apparatus has roller bearings. I hope in the near future to give the rubber tires a trial on some of the heavier apparatus. I am well pleased with the roller bearings so far.

"Third. We have in this department what may be termed, a life saving corps and training school. We have a five-story frame building in the rear of headquarters where the men go through a regular practice with scaling ladders, ropes, etc., the same as is done in the larger cities. I am well pleased with the work as it is quite beneficial to the men, giving them confidence as well as benefitting them physically."

## CHIEF SPRING, DEFIANCE, O.

"(1) We have no salvage corps.

"(2) We have a ball bearing hook and ladder truck, but no rubber tires. I am well pleased with the ball bearings and think them a good thing.

"(3) We have no life saving corps or training school."

## CHIEF SPENCER, CHELSEA, MASS.

"We have no salvage corps connected with this department, as the size of the city and the annual loss does not warrant the expense. However, I am intending placing a few rubber covers on some of our apparatus as there are times when they may be the means of saving many times their cost.

"We have never used rubber tires and I do not know enough about them to express an opinion, but as to roller bearings I consider them a success, and I would not order another piece of apparatus without them.

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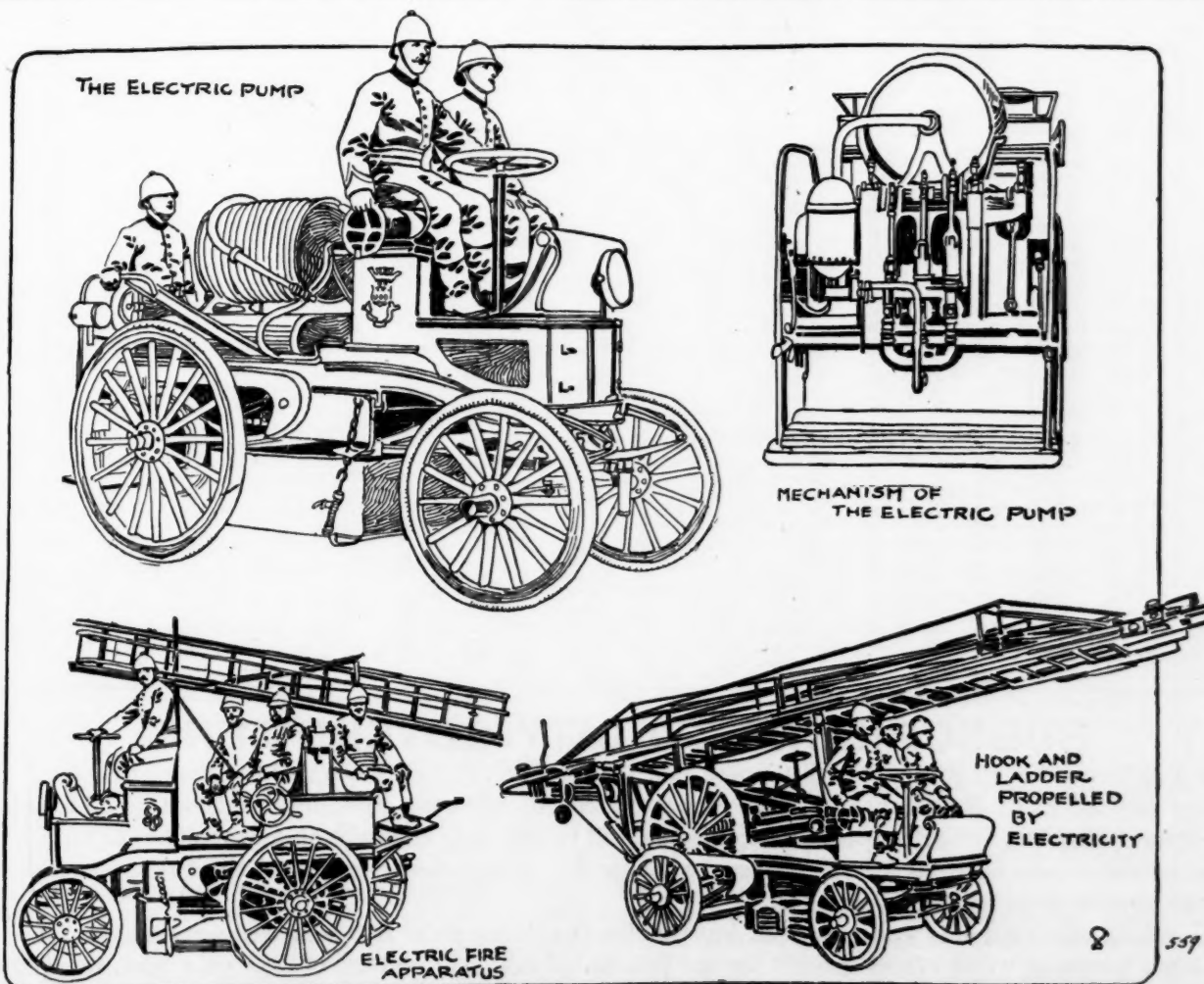
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## Statistics of Fires in American Cities having a Population of 20,000 and Upward.\*

NOTE.—In years where no total loss was given, the loss per capita has been based on insurance loss.

CITY.	Area sq. mi.	Population mated	No. of alarms	Loss per capita, 1899.	Loss per capita—ave. 10 years
Atlanta, Ga.....	12	120,000	384	.55	1.31
Augusta, Ga.....	—	—	—	—	1.87
Aurora, Ill.....	8	28,000	77	.26	h .51
Anderson, Ind.....	3	27,000	95	1.61	—
Albany, N. Y.....	15	120,000	674	2.82	2.31
Amsterdam.....	10	20,000	108	3.05	f 4.51
Auburn, N. Y.....	9	32,000	85	1.32	1.11
Akron, O.....	8	50,000	196	4.66	3.34
Allegheny, Pa.....	8	130,000	124	1.51	f .86
Altoona, Pa.....	6	40,000	205	.51	g 1.43
Allentown, Pa.....	4	38,500	63	1.29	g .55
Austin, Tex.....	16	30,000	83	1.50	f 1.41
Birmingham.....	9	50,000	239	.94	g 1.21
Bridgeport.....	15	65,000	160	1.26	h 1.26
Bloomington.....	4	25,000	113	.45	h .57
Burlington, Ia.....	10	30,000	120	3.09	d 1.70
Bangor, Me.....	6	27,000	102	1.11	1.35
Baltimore, Md.....	33	505,000	1,229	.89	1.64
Boston, Mass.....	37	500,000	1,768	3.49	3.56
Brockton, Mass.....	23	29,000	283	1.05	h 2.07
Battle Creek.....	6	20,000	62	.29	—
Bay City, Mich.....	—	—	—	—	d 2.63
Butte City.....	3	60,000	151	.46	h 1.89
Bayonne, N. J.....	8	30,000	73	.69	b .60
Binghamton.....	10	45,000	102	1.01	g 1.95
Buffalo, N. Y.....	42	400,000	1,012	1.99	h 2.13
Burlington, Vt.....	6	20,000	54	.81	14.78
Cripple Creek.....	1	25,000	58	.35	—
Columbus, Ga.....	5	20,000	95	1.72	12.87
Chicago, Ill.....	191	1,850,000	7,811	3.10	11.88
Cedar Rapids.....	13	30,000	171	.63	f .72
Clinton, Ia.....	25	28,000	110	.53	—
Council Bluffs.....	24	30,000	84	.34	g 1.44
Covington, Ky.....	4	45,000	133	.36	1.65
Cambridge.....	7	90,000	299	2.58	12.81
Chelsea, Mass.....	2	32,000	151	.99	i 1.04
Concord, N. H.....	3	19,000	122	.41	—
Camden, N. J.....	9	76,000	141	1.25	h 1.09
Cohoes, N. Y.....	11	28,000	69	.78	g 2.34
Canton, O.....	4	43,000	98	.82	d 1.38
Cincinnati, O.....	37	392,000	1,014	2.51	2.56
Cleveland, O.....	35	400,000	1,513	3.82	2.34
Columbus, O.....	16	142,000	561	2.97	12.75
Chester, Pa.....	3	35,000	66	.58	e .53
Charleston.....	5	63,000	94	.47	.81
Chattanooga.....	15	45,000	200	1.87	g 2.81
Denver, Col.....	54	170,000	488	1.21	f 1.82
Danbury, Conn.....	8	21,000	81	2.39	g 4.02
Decatur, Ill.....	8	30,000	118	1.42	f 1.99
Davenport, Ia.....	9	35,000	158	.58	g 2.36
Des Moines, Ia.....	56	80,000	411	4.37	h 1.69
Dubuque, Ia.....	—	—	—	—	b .74
Detroit, Mich.....	29	325,000	1,083	1.94	h 2.18
Duluth, Minn.....	67	70,000	167	3.51	h 2.43
Dayton, O.....	14	100,000	367	.85	1 .76
Dallas, Tex.....	9	65,000	294	4.25	15.90
Elgin, Ill.....	9	24,000	114	.79	h 1.03
Evanston, Ill.....	6	32,000	137	1.05	c .59
Evansville, Ind.....	6	75,000	240	.87	12.24
Elizabeth, N. J.....	7	50,000	94	.78	f .88
Elmira, N. Y.....	9	42,000	163	.99	h 1.59
Erie, Pa.....	7	65,000	184	.82	h 1.65
El Paso, Tex.....	2	23,000	40	.53	—
Eau Claire, Wis.....	8	23,000	111	.86	h .69
Ft. Smith, Ark.....	4	25,109	93	1.16	—
Ft. Wayne, Ind.....	5	50,000	154	3.57	e 1.57
Fall River.....	41	102,000	203	2.24	d 1.75
Fitchburg.....	27	30,000	139	.66	h .70
Findlay, O.....	24	24,000	69	2.32	b 1.44
Ft. Worth, Tex.....	6	44,000	236	1.54	f 2.74
Galesburg, Ill.....	9	25,500	93	.38	e .41
Gloucester.....	36	30,000	82	2.37	g 2.28
Grand Rapids.....	17	90,000	438	1.36	h 1.12
Galveston, Tex.....	7	65,000	223	.21	h 1.42
Haverhill, Mass.....	32	35,000	181	1.42	f 1.95
Holyoke, Mass.....	16	45,000	238	7.67	i 1.60
Hoboken, N. J.....	2	60,000	202	1.78	g 2.50
Harrisburg, Pa.....	4	51,000	73	.31	h 1.89
Houston, Tex.....	9	72,000	296	2.06	g 3.33
Hartford.....	—	—	—	—	c .80
Indianapolis.....	29	200,000	957	—	g 1.39
Jacksonville.....	9	33,000	206	3.85	g 1.24
Joliet, Ill.....	15	40,000	92	.84	g 1.59
Jackson, Mich.....	9	30,000	144	1.50	h 1.65
Jersey City.....	17	200,000	582	1.10	1.76
Johnstown, Pa.....	8	41,000	47	1.12	f .93
Key West, Fla.....	6	25,000	3	.001	e .63
Kansas City.....	12	48,000	259	4.40	h 7.85
Kalamazoo.....	11	26,000	104	1.39	—
Kansas City, Mo.....	26	200,000	1,142	6.11	2.92
Kingston, N. Y.....	—	—	—	—	b 1.92
Knoxville.....	6	47,000	121	2.43	13.55
Little Rock.....	15	40,000	173	1.87	g 2.08
Los Angeles.....	60	103,000	355	4.11	g 2.01
La Fayette, Ind.....	3	30,000	89	1.22	—
Lavenworth.....	7	23,485	129	1.14	g 1.10
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Lawrence.....	7	56,000	172	.71	i 1.21
Lowell, Mass.....	12	95,000	366	1.12	h 1.43
Lynn, Mass.....	11	68,000	403	.84	i 2.31
Lincoln, Neb.....	14	50,000	170	3.71	h 1.67
Lima, O.....	17	28,000	125	2.54	—
Lancaster, Pa.....	4	40,000	66	1.69	h 1.93
Lynchburg, Pa.....	4	25,000	79	4.27	h 2.57
La Crosse, Wis.....	8	35,400	160	1.60	i 2.74
Mobile, Ala.....	6	40,000	159	2.08	2.54
Montgomery.....	3	40,000	161	2.06	f 2.02
Macon, Ga.....	4	30,000	122	.75	i 3.11
Muncie, Ind.....	6	30,000	125	.37	f 2.78
Malden, Mass.....	5	34,600	152	1.31	h .75
Muskegon.....	15	30,000	157	1.30	h .89
Minneapolis.....	56	225,000	1,035	2.91	h 3.39
Manchester.....	34	60,000	190	.99	g 1.04
McKeesport, Pa.....	9	35,000	203	.32	g 1.07
Memphis, Tenn.....	16	122,918	362	6.93	13.55
Milwaukee, Wis.....	23	290,000	1,326	1.44	g 1.91
Meriden, Conn.....	4	28,000	37	.72	i .71
New Britain.....	—	—	—	—	e .76
New Haven.....	23	115,000	287	.75	11.26
Norwich, Conn.....	9	27,000	31	.35	f .65
New Albany.....	9	27,000	138	.43	i .65
Newport, Ky.....	2	33,000	120	.14	i .44
New Orleans.....	60	275,000	453	2.01	14.36
New Bedford.....	12	60,000	169	.67	g .99
Newton, Mass.....	20	30,000	257	1.06	h 1.81
North Adams.....	10	22,000	57	1.69	—
Nashua, N. H.....	33	25,000	79	2.08	i 1.12
Newark, N. J.....	21	300,000	586	.72	1.64
New Brunswick.....	—	—	—	—	b 2 "
Newburg, N. Y.....	4	25,000	13	.34	d .96
New York, N. Y.....	244	3,677,600	9,130	7.81	—
New Castle, Pa.....	6	30,000	114	2.87	—
Norristown, Pa.....	6	25,000	39	.31	h .53
Newport, R. I.....	5	24,000	83	2.30	2.14
Nashville.....	11	120,000	261	2.14	h 3.18
Norfolk, Va.....	5	70,000	164	1.01	e .91
Oakland, Cal.....	23	75,000	172	.59	h 1.01
Ottumwa, Ia.....	8	20,000	106	1.37	f 2.69
Omaha, Neb.....	27	150,000	421	2.48	g 1.36
Oswego, N. Y.....	8	25,000	88	1.01	h 4.24
Ogden, Utah.....	24	24,000	47	.26	h 2.15
Oshkosh, Wis.....	10	30,000	137	—	b 5.65
Peublo, Colo.....	8	45,000	137	1.02	f 2.03
Peoria, Ill.....	6	62,000	332	.85	h 2.74
Paducah, Ky.....	10	30,000	115	.52	f 1.09
Portland, Me.....	18	48,000	217	3.07	g 1.97
Pittsfield.....	6	23,500	39	2.04	—
Patterson.....	9	115,000	378	1.43	i 1.59
Plainfield.....	6	17,000	86	1.31	f 1.44
Poughkeepsie.....	4	25,000	60	.16	g .87
Portland, Ore.....	40	100,000	286	1.71	i 3.27
Philadelphia.....	130	1,212,868	2,925	3.32	1.92
Pittsburgh, Pa.....	28	325,000	438	1.21	g 3.21
Pawtucket.....	9	35,000	164	.73	h 1.90
Providence.....	18	170,000	939	1.97	1.88
Petersburg, Va.....	—	—	—	—	f 1.49
Quincy, Ill.....	10	45,000	126	.70	h 1.79
Rockford, Ill.....	4	30,000	11	—	i 1.92
Rock Island, Ill.....	6	23,000	73	1.68	e .59
Richmond, Ind.....	4	22,000	26	.52	f 1.24
Rochester.....	25	175,000	360	—	g 1.94
Reading, Pa.....	6	90,000	81	3.70	i 1.78
Richmond, Va.....	6	100,000	305	.47	h 1.41
Roanoke, Va.....	—	—	—	—	c 1.95
Racine, Wis.....	5	30,000	102	.96	f 1.89
Sacramento.....	6	33,000	161	—	e 1.72
San Diego, Cal.....	75	22,500	41	.99	—
San Francisco.....	39	350,000	911	2.15	13.11
Savannah, Ga.....	9	70,000	228	2.19	3.80
Springfield, Ill.....	7	42,000	131	.98	i .82
South Bend.....	15	35,000	162	2.68	1.54
St. Louis, Mo.....	30	48,000	155	1.26	12.28
Salem, Mass.....	8	36,000	145	2.12	1.98
Somerville.....	5	60,000	180	.81	i 1.71
Springfield, Mass.....	37	58,000	205	1.79	2.84
Saginaw, Mich.....	15	56,000	209	3.06	h 3.29
St. Paul, Minn.....	55	175,000	694	2.31	h 2.11
St. Joseph, Mo.....	11	75,000	278	.40	2.12
St. Louis, Mo.....	62	700,000	2,091	1.33	12.52
Springfield, Mo.....	18	30,000	130	.32	h 1.86
Schenectady.....	2	29,000	30	—	d .63
Syracuse, N. Y.....	23	133,000	284	2.28	12.54
Springfield, O.....	11	45,000	182	.31	g .86
Scranton, Pa.....	20	110,000	250	1.77	e 1.31
San Antonio.....	36	65,000	150	1.11	e 1.16
Salt Lake City.....	52	70,000	131	.50	11.33
Seattle, Wash.....	38	80,000	227	2.41	i 1.99
Spokane.....	16	45,000	187	1.06	i 3.91
Sheboygan.....	6	23,000	75	.94	f .78
Superior, Wis.....	27	40,000	133	1.26	e 1.98
Tampa, Fla.....	5	26,000	54	2.28	—
Terre Haute.....	—	—	—	—	e 2.17
Topeka, Kas.....	7	40,000	145	1.69	h .81
Taunton, Mass.....	42	30,000	115	.70	h 1.11
Trenton, N. J.....	7	70,000	141	.33	h 1.06
Troy, N. Y.....	9	70,000	220	1.70	g 2.12
Toledo, O.....	30	150,000	625	5.09	3.80
Tacoma, Wash.....	9	55,000	164	.70	h 1.08
Utica, N. Y.....	7	63,000	170	.89	h 2.74
Waterbury.....	4	48,000	107	.34	h 1.91
Wilmington.....	11	80,000	145	.91	a .24
Washington.....	73	285,000	667	1.66	11.50
Wichita, Kas.....	16	27,000	111	3.20	h .98
Waltham.....	14	22,000	87	.22	f .96
Worcester.....	36	120,000	499	1.39	



## FIRE STREAMS AND THEIR HANDLING.\*

There is no subject to be discussed by the fire service of more interest or importance than the fire stream and its handling. It is the keynote for either the success or failure of the work of firemen.

The efficiency of the fire service stands first in importance in every community, over all other municipal departments. There is, perhaps, nothing that strikes such a dread to the heart as the cry of "Fire." The devouring element is no respecter of person or station. It assails with equal avidity the palace and the hovel. Side by side stand the merchant prince and the humble husbandman, sorrow blanching the cheek of each. One, as he views the great warehouses, in which are stored merchandise representing a kingly fortune, crumble to ashes, and the other, as he stands by the home, which by his hard toil has reared to shelter the wife and children, and watches it vanish in flame and smoke. These are sad experiences to which we are all heir, which sometimes visits us in gigantic calamities, sweeping out of existence in a few hours whole villages and vast areas of great cities.

What means, then, are the best for conquering, if possible, this foe to both life and property?

The arduous duties of the fireman call for qualities of no mean order, qualities which only require occasion to glow in deeds which command a world's admiration and respect. The true fireman is a true man in every sense the words imply, intelligent, progressive, loyal, brave, and self-reliant. He is a public servant who cannot be too highly prized. He should be a thorough student in hydraulics; he must know how to produce the best results of streams under different pressures and conditions; he must understand why certain sizes of streams in one fire will prove a complete success, while the same streams and pressures would be the direct means to instantly increase another fire into a conflagration.

The stream, then, and its handling, is the supreme agent that he must depend upon for his success. What ammunition is to an army, water in its different manipulations is to the fireman. If up-to-date tools for but one can be afforded, then the fireman should receive the first consideration, for he is a picked man, who continually sleeps on his arms, always ready at a second's call.

Science has furnished us with the chemical engine and the fire extinguishers, excellent tools for the fire service for all incipient fires, and should be utilized wherever practicable. The character of the stream produced is in the form of a spray, under a pressure of 100 to 200 pounds or more to the square inch, the streams seldom reaching a distance exceeding 40 feet. While the small stream is found most excellent in a fire in its incipient stages, if it were possible to project the same streams into the fire that is reaching into large proportions, even a thousand such streams, the firemen would then simply be furnishing fuel for the flames, and inviting a conflagration instead of subduing the fire. It will be found that inadequate streams only lead to disaster. The common saying that the fire is beyond control, simply means that it is beyond control of the sizes of streams then in use.

After a careful perusal of this subject it will be seen how a fire under certain conditions can be increased, or the same averted by the use of proper tools.

Water, when properly applied, is the best known substance for reducing the units of heat and extinguishing a fire. It is a liquid, composed of two gases, hydrogen and oxygen, in proportion of two parts of hydrogen to one part of oxygen. Oxygen is the chief support of combustion.

What, then, is the effect of different sizes of streams projected into a fire after reaching certain degrees of heat. Water at 212 degrees of heat is turned into steam. Wood chars at 350 degrees, and takes fire at 550 degrees. Steam at 1,470 degrees is turned into its natural gases, oxygen and hydrogen. Hydrogen is considered, when burnt separately, the hottest of all known gases, and when mixed with three-sevenths of its volume of air explodes, and in its incandescent state it burns at such an intense heat as to melt almost any known substance.

The temperatures of fires is as follows: Red, 977 degrees; cherry, 1,470 degrees; orange, 2,000 degrees; white, 2,370 degrees; dazzling, 2,730 degrees. The melting or fusion point of metals is as follows: Cast iron, 2,000 degrees; glass, 2,377 degrees; steel, 2,550 degrees; wrought iron, 2,900 degrees; fire brick, 4,000 to 4,200 degrees.

Fires differ largely in their intensity of heat. They are supposed to be augmented largely from inadequate streams, which are converted into their original gases, or decomposed, adding fuel to the flame.

The complete success of the fire company, then, is in meeting the fire with a size of stream near as possible to at once drown the fire. In this case the whole amount of water is utilized in reducing the temperature, which at once puts the large fire in control, bringing it to a point where smaller streams can then be made available and valuable; or in other words, every fire company is incomplete without their cannon, or large stream on fires liable to reach into large proportions. A cannon stream for a fire company is just as essential to the fire service as the cannon for an army. The large and long distance streams must shell the large fire, protecting the firemen from heat with their smaller streams as far as possible; by smaller streams I mean from one to one and one-fourth inches.

There is probably no subject pertaining to the fire service so important to be thoroughly understood, and one that firemen generally understand so little, as that of pressure and distances that different sizes of streams can be projected under different pressures. At first thought one might reasonably suppose that the more pressure applied to a given size of nozzle, the greater the distance the stream would reach, and that any increase in size, without any increase of pressure could only be proportionately less in distance. It will be found that the opposite of this reasoning proves true in hydraulics. As strange as it may seem to some, pressure above a certain point on any size of nozzle, produces a result the very opposite.

Science tells us that an increase of pressure means simply an increase of velocity, and that is the resistance of the air to a stream is in proportion to its velocity. Such is the nature of water, that the instant its velocity is increased, it meets with an added resistance of the air, and begins to "strip," or as the firemen call it, "tear itself to pieces." This fact appears in an admirable treatise on "Fire

Streams," by George A. Ellis, of Springfield, Mass., a work based on experiments made by ex-Chief Engineer A. P. Leshure, of the fire department of that city. That my position on this matter may be fully fortified, I quote the conclusions of this author. He says: "From a careful study of these experiments, I am led to the belief that each size jet is capable of being forced a given distance horizontally, and cannot, by any pressure at the nozzle, be made to go farther."

As to the effect of increased pressure, he says:

"But water, not being solid, but composed of an infinite number of particles that move with great freedom among themselves, the instant its velocity is increased, it meets with an added resistance from the air, and begins to strip sooner; it lacks coherence, and having been previously taxed to its utmost to reach the end, now, in spite of increased quantity of water, finds itself unable to hold together, and thus takes advantage of its added weight, or as the firemen express it, 'tear itself to pieces,' and fails to reach the same distance as under 50 pounds less pressure."

The correctness of the above can be found in all books on hydraulics, thousands of experiments are noted on distances of streams in different sizes and pressures, all arriving at the same practical results.

This subject is well brought out in a work on "Practical Hydraulics," by Thomas Box, on page 39. A table giving the maximum height that each size of jet can be forced under different heads from 10 to 400 feet, and in sizes of streams from one-eighth of an inch, increasing each size in eighths of an inch up to two inches in diameter. In each of the 200 or more different tests under the same head, in each size, as the sizes of stream increases, a substantial increase of distance is made.

Take for example the five-eighths of an inch size stream, the maximum that this size can be forced perpendicularly in still air, under 200 feet head or 86 pounds pressure is 100 feet. Now what is the result if the pressure is increased from the 86 pounds to 130 pounds; as the pressure increases, the height diminishes to 75 feet, when reaching 130 pounds.

Again to show the results that can be obtained from the 86 pounds pressure, by simply increasing the size of nozzles, all under the same pressure, the three-fourths inch reached 116 feet. The one-inch, 137 feet. The one and one-fourth inch, 150 feet. The one and one-half inch, 158 feet. The one and three-fourths inch, 166 feet. The two-inch, 169 feet. Thus the same pressure that sends the five-eighths inch 100 feet high, sends the two-inch stream 69 feet higher. On the other hand, the 130 pounds that cut down the five-eighths inch stream from 100 to 75 feet, sends a two-inch stream 230 feet high, or an improvement in perpendicular distance of 155 feet, besides delivering over 900 per cent. larger volume of water.

To carry out this five-eighths of an inch stream still further, it was found that when 130 pounds pressure was applied, a stream of 75 feet high was the result, a pressure of 43 pounds gave the same result in height, and with a pressure of 151 pounds the stream then was reduced to 50 feet high, when 26 pounds would have accomplished the same height; while the 151 pounds pressure will send a one and one-fourth inch stream 198 feet high. The one and one-half inch stream 222 feet high. The one and three-fourths inch stream 241 feet high, and the two-inch 255 feet high; or the two-inch stream

\*A paper read by Cyrus R. Robinson, of East Concord, N. H., before the Massachusetts State Firemen's Association, held at North Adams, Mass., September 5, 6, and 7, 1900.

205 feet higher than the 151 pounds can possibly force the five-eighths inch stream.

As these results of distances and pressures can be proven in any fire department with proper tools, I will take up briefly but one or two more sizes, viz.: The maximum height that a one and one-fourth inch stream can be played in still air is 200 feet, under a pressure of 173 pounds, while the one and one-half inch, under the same pressure is sent 233 feet. The one and three-fourths inch 257 feet, and the two-inch 275 feet; or an increase of 75 feet in height, simply by enlarging the size of stream.

In explanation under this table, he says:—

"It is a result of this rule that each particular size of jet attains its maximum height with a certain head of pressure, and that if the head is increased beyond that point, the height of the jet is not increased thereby, but is actually diminished. This result is anomalous: It may be that an excessive head breaks the issuing stream and causes it to meet with more resistance from the air than the jet of water issuing under a moderate head." He further says:

"Experiments with excessive heads show an enormous loss, thus a one-inch jet in diameter, with 445 feet head, reached a height of about 109 feet only."

The reason is, that until quite recently there has been no safe and quick way of directing nozzles. Even with hand engines, when good pressures are required, they are held with great difficulty, requiring in many cases three and four men to direct a nozzle.

In handling nozzle pipes, the pull back, or recoil is in exact proportion to the area of the nozzle discharge and pressure applied.

For an example, take for a basis a water pressure of 200 pounds, which can be easily produced on a steam fire engine. If the pressure is more or less, then the resistance or back pressure for the firemen to hold will be in proportion. On a basis of 200 pounds, it is found that the back pressure on a three-fourths inch stream is 88 pounds. A one-inch it will be increased to 157 pounds. A one and one-eighth inch to 194 pounds. A one and one-fourth inch to 244 pounds. A one and one-half inch to 352 pounds. A one and three-fourths inch to 481 pounds, and a two inch to 628 pounds.

Mr. John R. Freeman, engineer of the Associated Factory Mutual Insurance Company, in an address before the Massachusetts State Firemen's Convention at Lawrence, Mass., September 12, 1890, on the urgent necessity of firemen having some improved method for handling fire streams, said:

"You hardly need to be told that a pressure of 40 pounds at the nozzle, with a one and one-eighth inch stream, is about all that even a skilled hoseman can conveniently manage, without he has one or two more men to help him; and a nozzle pressure of 60 pounds will tax all the energies of three strong men to hold."

The above evidence shows that modern fire duty should provide for the handling of from 200 to 400 pounds of back pressure, this pressure has no relation in any way to hose pressures; while only about 40 to 60 pounds can be made available in the old way. At many exhibition tests, high pressures are maintained, and two or more men, if well braced, can for a short time hold the pipe with a one and one-eighth inch nozzle when run at a high pressure, for the reason that the hose is kept straight to the ground, and the water helps to make a sort of strut, or

support, which helps the firemen; but at a fire it does not prove practical, for the moment the nozzle direction is changed, this prop instantly leaves the pipemen. For this reason every engineer has strict orders, in case of fire, to gauge down his power to a safe limit for the pipemen."

Many have supposed, erroneously, that the larger the size of discharge the easier the direction of the stream, while the opposite proves true.

The accurate direction of streams in any size up to two and one-half inches in diameter under any possible pressures can now be easily and safely accomplished. The streams practically self-balance, and the direction can be instantly changed as desired. To show the improvement that has been made, a girl eight years of age has directed at the same time four one and one-eighth inch streams, two in each hand, from two steam fire engines running at their highest capacity; also two one and three-fourths inch streams at the same time, each reaching over 300 feet. This should convince the most skeptical that improvements are now in store that are invaluable for every fire company.

I can safely say that at the present time more than 95 per cent. of all the fire companies in the United States go to every fire with the same sizes of nozzle streams and handle them practically in the same way as 50 years ago. Their branch pipes may have answered for those days with hand engines, etc. Since then great strides have been made by cities and towns in building of water-works, and the substitution of large steam and power pumps in place of the hand engine, supplying thousands of gallons of water, in place of one formerly.

With modern tools this increase in supply, if desired, can almost instantly be projected into a fire, if reaching into large proportions, which will at once reduce the units of heat and put the fire in control. In the past this large supply has been forced through small nozzles under high pressure, as the power is increased on any size nozzle, the excess of water forces the stream into a spray, finer and finer, constantly expanding, and the stream reaching less distance, with the character of the stream and its effect on the fire as I have described, contrary to every sound principal of hydraulics, and the proper application of water on fire.

In fact it is simply impossible for firemen to handle and produce modern fire streams with their branch pipe system. It has become worthless, except, perhaps, for small fires. On this point statistics will easily show the correctness of my position. While the supply of water and power pumps in almost every city and town in the country has steadily increased, the fire losses of the country have increased in a still greater ratio; and this enormous increase in the fire losses has wholly come from conflagrations for which no modern fire streams have ever been provided.

I believe here is found the most important field for the action of municipal communities possible. Every provision possible should be made to avoid conflagrations.

1. Any improvement to the fire service lessens the risk of fire in proportion to such improvement.

2. Property owners who insure pay all the fire losses. This special tax on a community equals the municipal tax, and often exceeds it.

3. All rates of insurance are based on the risk of a conflagration. If this risk is not substantially covered, then the cost of insurance must advance from time to

time to correspond with the growth of a community, to cover the increased risk of larger conflagrations.

4. Officials neglecting the fire service by making niggardly appropriations, debarring their communities from procuring the most necessary fire tools, should, I believe, be held for criminal negligence.

The few facts that I have thus far presented show plainly that the right application of the principles of hydraulics are just as essential for success in the fire service as in every other line of business, and if practically carried out will very soon revolutionize the fire service.

I have already stated that the fire service stands first in importance over all other municipal departments, yet it is found sadly neglected in too many communities and left for success too much to "luck and divine providence."

The importance of improved fire streams cannot be overestimated. It is a common remark and a well-known fact that seconds count; a few seconds in a great many instances means a large amount of property either saved or lost. No fire company, then, should be handicapped upon reaching the fire, for a fire tool from the extinguisher stream, to at least a two-inch stream. If but only a part of these different sizes can be afforded, it should be the sizes running from one to two inches in diameter, for the reason that the small fire can be conquered with the medium sizes, while a fire reaching into large proportions, the cannon stream, as I have before stated, is the only one that is effective.

Some may say that the cannon stream may not be required for every fire company, but I think you will find that a community large enough for a fire service is large enough to some time see the necessity of at least using the cannon sizes of fire streams; also the folly, if but a certain quantity of water can be made available for the large fire, in dividing it all up into a large number of small streams.

I find that the results in sizes and distances of streams were well known by all students in hydraulics many years ago; yet little generally has been done for their proper application for the fire service, except for the small fires. I will here state that the direct results of distances and pressures with the different sizes of streams I have given, are taken from standard works on hydraulics, and were obtained with a short nozzle about eight inches long, which was found best set as close to the base of supply as possible; the results secured are without the use of lines of hose, so that the friction in lines of hose has not entered into the preceding results I have given.

I will now take up, in as brief a way as possible, the application of these principles for practical fire service.

A new system has been devised which is adapted equally well to the largest and smallest cities and towns, and to all manufacturers having fire protection. It has revolutionized the fire service in producing and handling fire streams. Some may say what looks well in theory does not always prove satisfactory in practice. I will say that constant experiments to perfect this system have been going on for several years, involving a vast amount of labor and thousands of dollars in expense in perfecting and adapting this system for all of the many duties required for the fire service.

As the time required to produce fire streams is an important factor in fire fighting, I will take up this subject briefly. As the nozzle used in the new system is only about eight inches long, it admits



of much quicker adjustment to the hose, and is much more easily carried than any former make of pipes. Any make of shut-off nozzles can be used as desired and not increase the nozzle length. To adjust it to the nozzle is a question of but one or two seconds of time, and for all small streams it is complete in about half the time of Branch pipes, so called.

The tool to produce these large sizes of streams, in weight and space is about that of a three or four-gallon fire extinguisher. It is made in sizes of two, three, and four-way sets.

The time allowed for large streams, making all connections complete, with the stream in operation, has been accomplished with the three-way, which is the medium size, in 26 1-2 seconds, and has averaged in different fire companies about 30 seconds, under the following conditions, viz.: The device was taken from the wagon and connected with the hydrant, and all connections made complete. Time taken on arrival of the company at the hydrant, and a full stream of water leaving the nozzle, with firemen directing the same. As the device above described can be set at work at once as soon as the first line has made connections, and the other line connected as required, without stopping the first stream, gives even better time record for connections in actual service.

An important feature in this new system, is, that it fully carries out for the fire service the same general rule in hydraulics as I have previously shown, viz.: It improves each size of stream, and as the size increases, the greater the distance, up to a certain size, and all sizes reaching long distances under very low pressures. I find the maximum of streams for distance and size in average fire departments is reached at about two inches in diameter. The minimum and maximum sizes in this new system runs from three-fourths of an inch to two and one-half inches in diameter.

What could be more desirable for a fire company, if the fire is increasing beyond the capacity of small streams, than tools at hand to send out streams in both greater volume and distance at a moment's notice, without increase of pressure?

To show the practical workings of this system for the average fire company, I will cite a few improvements out of a large number that it has given in its more or less crude forms, before reaching its present stage of completeness.

In the past, from a hydrant having a gravity pressure of 75 pounds, the maximum distance that a one-inch stream has been thrown is about 120 feet. From the same hydrant pressure, a solid two-inch stream can now be thrown 75 to 100 feet greater distance. Increase the pressure to 100 pounds, and the two-inch solid stream reaches more than 300 feet. It has sent out in a public trial test, from one hydrant having a gravity pressure of only 80 pounds, three one and three-fourths inch solid streams, all at the same time, 209 feet each; also from the same hydrant three two-inch streams, 179 feet. This decrease in distance with the three two-inch streams was because the maximum capacity of the hydrant had been reached with the three one and three-fourths inch streams, although this was from an up-to-date hydrant, and fed from a 20-inch street main. A 50-pound hydrant will produce one and three-fourths and two-inch solid streams about 175 feet, and with each 10 pounds increase in pressure adds largely to the distance; 135 pounds has sent a two-inch solid stream 450 feet. A hydrant pressure of 120

pounds has easily sent a two and one-fourth inch perpendicular solid stream 225 feet. Hundreds of records of similar tests in sizes of streams and distances can now be furnished from any section of the country.

The tools to accomplish the work that I have described are pronounced by fire engineers as the most important, as well as the least expensive, addition that can be made to a fire service. Singular to say, that as each of these many improvements has been brought out, they have been granted the first and only patents for devices to accomplish this important work.

Perhaps some may say that actual proof in practical work is worth a thousand times more than any lecture on theories of fire streams; to such I might cite to more than a score of cities this season, where it is claimed that this system has been the direct and only means at hand which has stopped a conflagration. Boston, since its complete adoption four years ago, has not up to this time had a fire get outside the building in which it originated. Yet this fact does not prove that Boston is to have no more conflagrations; any city is liable to a conflagration, as soon as the size of the fire and its intensity gets beyond the sizes of streams in use.

As these improvements have been made they have covered as far as possible every detail of work, with a view to not only produce the best possible streams from given pressures, but has provided for the safety and the convenience of the men in handling the streams. In this respect perhaps I should mention a single feature, viz.:

The deadly electric current, that has grown to such an alarming extent in the past few years, is a comparatively new danger firemen are called upon to meet. A solid stream of water striking a highly-charged electric wire, produces one of the best conductors to carry its death-message to the pipemen. This system is the only one that covers practically this important ground, and meets the approval of the best electric experts, to insure safety from streams coming in contact with electric wires—a feature alone, if no other, that should insure its adoption.

In conclusion I will say: It will be seen that this subject covers a vast amount of interesting ground; a paper of this kind can touch upon only a very few of the most important points. I have endeavored, as nearly as I have been able, to show the principles of hydraulics as they should be applied in the improvement of streams in modern fire service.

I have given the subject of fire streams and pressures a large amount of attention for many years, and have made thousands of tests with different sizes of nozzles, under all pressures in the scope of the fire service, and believe my deductions that I have here shown will prove to be practically correct.

If this paper may be the means to interest others in carrying on this work still further, which I hope it may, I believe it will ultimately prove of great benefit to the fire service.

It shows how superior streams may be produced almost instantly in any sizes.

It shows that small streams should not receive high pressures to get the best effect, and that streams can be projected in both largely augmented volume and distance under low pressures.

It shows how a large amount of wear and tear can be taken from the hose, fire pumps, etc., and their reliability and durability largely increased.

It shows the only method to stop the enormous increase in fire losses and the only practical plan looking towards lower rates of insurance.

#### TO MAYORS AND COUNCILMEN.

THE SEAGRAVE COMPANY NOT IN TRUST OR COMBINATION—ORGANIZED AND WORKING ON INDEPENDENT BASIS.

Permit us to announce that the Seagrave Company, of Columbus, O., is acting independently of and is not identified in any manner with the recently formed trust, or combination, of fire fighting apparatus companies. All reports to the contrary are absolutely false and misleading.

The Seagrave Company is a new organization, just incorporated. It succeeded on the first of July last, to the business of the old Seagrave Company, a co-partnership. It has enlarged its facilities for production and by reason of ample capital, the procurement of the best mechanical skill, and other special advantage, is prepared to supply all demands for the most approved and effective fire fighting apparatus of every description with the exception of steam fire engines.

The great merit of our trussed truck frames, composed of wood and steel, and our trussed ladders, as is already well known, they being lighter and stronger than any other frame or ladder in the market. These frames and ladders are fully protected by patents.

Our testimonials are from the most experienced men in the United States and Canada, and an inspection of them will convince you that we do not make too broad a statement when we say, that the Seagrave hook and ladder trucks and hose wagons, combination chemical and hose wagons, combination chemical hook and ladder trucks, hose reels, and other specialties, are the best manufactured in the world.

We wish also to state that these trussed truck frames and trussed ladders, as well as our other products, can only be purchased direct from The Seagrave Company, Columbus, Ohio, or its authorized representatives, and not from the newly organized trust or combination, or any of its agents.

We solicit your patronage and will be glad to send at your request, our catalogue which fully describes and illustrates our product.

Requesting the favor of your consideration and assuring you that we will give any inquiry you may be pleased to make, immediate attention, either by mail or by the personal call of one of our representatives, we are, very respectfully, the Seagrave Company.

Office: 505 and 506 Schultz Building, Columbus, Ohio; Factory: Lake Avenue and Hocking Valley Railroad.

—New York city is using 75 sets of the "Kelly Springfield" rubber tires on fire apparatus alone, which speaks well for the economy of rubber tires on heavy apparatus.

—The final argument in the suit between The Rubber Tire Company (Consolidated Rubber Tire Company) and the Victor Rubber Tire Company, was made before Judge Thompson, in the U. S. Court, at Cincinnati, October 2, 1900.

# MUNICIPAL ASSOCIATIONS.

## THE MUNICIPAL REFORMERS.

### THE YEAR'S WORK—BRIBES DONE AWAY WITH—PUBLIC OWNERSHIP ADVOCATED—MUNICIPAL PARTIES NOT EXPEDIENT.

The sixth annual gathering of the National Municipal League met at Milwaukee last month. It was the most notable in its history. The papers presented and discussed were of vital interest and given wide publicity by the press of the country. An abridged account of some of the papers presented follows:

#### THE YEAR'S WORK.

The Hon. Clinton Rogers Woodruff, of Philadelphia, who is the secretary and moving spirit of the organization, said in part, in reviewing the year's work:

"This year the National Municipal League has 119 organizations on its roll of affiliated members and its records show a grand total of 463 devoting all or a part of their time to the study of the municipal problem.

"These figures tell of the phenomenal growth of interest in municipal affairs within the past decade.

"When we review the shortcomings of a year we feel as if the situation were indeed grave, and so in truth it is. The official recognition and protection of vice and immorality in many of our large cities the utilization of public power and office to serve private ends; the prevalence of official blackmail; the selfish party and factional ends; the sinister influence of corrupt corporations, present a picture at once dark and forbidding and constitute a problem of serious import and difficulty.

"The situation, however, is by no means hopeless. For every year brings a keener appreciation of its gravity. Every year brings new forces into the field to combat the forces of evil. Every year witnesses a development of public sentiment in the direction of higher municipal standards, and advances along definite lines. Widespread corruption and political degeneracy cannot long prevail in the face of widespread investigation and discussion and efforts at improvement. If the National Municipal League has served no other function, it at least has served to show that serious as the municipal problem is, the outlook is full of hope and promise.

"One great difficulty with municipal reformers in the past and present has been a too great desire to get ahead and to introduce the political millennium without adequate political preparation. In other words, they have failed to appreciate and realize even though they may recognize it, that political instincts and institutions are of necessarily slow growth.

"The persistency of the organized effort for municipal betterment is an equally encouraging factor. Many of the organizations that were at work in 1894 at the time of the Philadelphia conference, or were formed shortly thereafter, are still at work, with no sign of abandoning their efforts. The City Club of New York, the Municipal Leagues of Philadelphia and Milwaukee, the Civic Federation of Chicago, the Merchants' Association of San Francisco, the Reform League of Balti-

more, the various civil service reform bodies have done more than maintained an existence. They have increased in power, efficiency and influence.

"One of the great obstacles standing in the way of that separation of the consideration of municipal affairs from state and national politics, for which this league pre-eminently stands, has been the existence on the statute books of laws which place a premium on straight party voting and discriminate against the independent voter and candidate. A citizen fully determined to vote his convictions in this direction finds after entering the polling booth that the tickets and the distribution of the offices have been so arranged that it is a matter of great difficulty for him to carry out his intention. The election of United States Senators by a direct vote of the people would eliminate national politics from our state legislatures. The establishment of municipal home rule would eliminate municipal questions from them.

"There has been no abatement of public interest in the subject of the municipal ownership of municipal monopolies. Indeed, there seems to be a general acquiescence in the contention that each city should own all its franchises; although there is still a great diversity of opinion as to whether the city should control or operate them. There are few indeed who are willing to maintain that a city should give away or sell for all time the right to run street railways, to furnish heat, light, water, or other municipal necessities. To advocate such a policy would be to sanction the utilization of city property for the benefit of the few at the expense of the many. There are few who are willing to do this, so that the discussion has practically narrowed itself down to the determination whether the city shall merely control the franchise in a general way, reserving a fair rental, or whether it shall actually operate the plants directly. In considering this phase we find that the consensus of opinion seems to be in favor of the operation of water plants and the control of street railway operations, with opinion about equally divided on the subject of lighting. One thing is perfectly sure and that is as a result of all this discussion concerning municipal ownership, control and operation, there has been a material improvement in the conditions which the city has been able to impose; and secondly the people have been interested as nothing else has succeeded in doing, in questions of local government. Matters pertaining to water, heat, light and transportation come home directly to the average citizen and any policy affecting them appeals to him as no others do."

#### BRIBES DONE AWAY WITH.

Rev. Dr. Washington Gladden, of Columbus, Ohio, a member of the Columbus City Council, had as his subject "The Influence of Public Service Companies on City Government." In the course of his remarks he said: "Some of the relations of public service companies to city governments are open and lawful, but it is generally believed that relations of a subterranean or illegitimate character are often maintained between representatives of the city and representatives of these companies by which the public is plundered. Such illicit relations do not always

involve the payment of money by the corporations to the municipal officers; the money if often paid to those who control the councilmen, and other methods of influence are employed. The election expenses of candidates are often paid. Along with these secret methods there is much direct bribery; many who occupy high positions in society are connected more or less closely with this nefarious business. Mayor Swift, of Chicago, told the precise truth when he said that most of the bribery of City Councils was the work of 'representative citizens.'

"Those who practice these villainous arts justify themselves on the ground that a man must protect his property. 'Would you sit still,' they demand, 'and see your hard earnings confiscated by robbers?' It seems to be assumed that bribery to prevent the spoliation of properties is justifiable. Just here the public conscience needs toning up. There is really very little distinction between the coward who is bullied into bribery by the public spoliator, and the corruptionist who himself takes the initiative. The one lets the bandits make a tool of him and the other uses the bandits as his tools. Which is the more honorable? On the whole I have more respect for the aggressive briber. The real criminal is always the man who pays the money.

#### PUBLIC OWNERSHIP ADVOCATED.

"The greatest danger to American institutions," Dr. Gladden continued, "arises from the relation of public service corporations to city governments. What is the remedy? Something might be done by stringent state legislation. The state ought to enforce complete publicity in the accounts of all these companies, to limit the capitalization to the cost of the plant, and to require franchises to be submitted to popular vote. But these measures will not probably be found effectual. Nothing is likely to reach the case except public ownership of municipal monopolies.

"We may reason as we will about the inexpediency of such ownership; the fundamental fact is that it is required by the elementary principles of democratic government. These public service corporations are monopolies—they all come to that sooner or later—and a democratic people cannot permit the existence of private monopoly, for the essence of monopoly is taxation without representation. It is the constant and flagrant violation of this primary principle of free government which has produced the conditions now prevailing."

#### MUNICIPAL PARTIES NOT EXPEDIENT.

A paper on Municipal Political Parties," by Dr. Milo R. Maltbie of New York city, was read by the secretary.

Dr. Maltbie's paper, "Municipal Political Parties," principally dealt with the formation of independent municipal parties; that is, parties having nothing to do with state or national elections. Dr. Maltbie does not believe, except in extreme instances, in the formation of such parties, and in supporting his conclusions said in part:

"The formation of exclusively municipal parties is discountenanced by the fact that such parties do not exist, except in a few exceptional instances, and that they have been always subject to an exceedingly high death rate. Notwith-



standing the impression given by a few writers upon city affairs, it is nevertheless true that with scarcely an exception municipal elections in all cities are fought out not between purely local or municipal parties but between the local branches of the national parties. There are 'parties' whose interests are local or self-centred, but a party whose policy deals with municipal problems, whose field is confined to one city and which avoids national politics, does not exist upon the European continent.

"The adoption by the national parties of municipal programs—the announcement of their positions upon municipal questions—is, I believe, the true position of the party in municipal politics. Already the trend is in this direction. Party platforms make more reference to local questions than formerly. The voter is not so content to vote the same ticket in municipal as in national elections. He insists upon knowing what the party's position is upon local questions.

"What is wanted is not so much the independent party as the independent man; the man who has high ideals and yet an accurate estimate of how rapidly progress can be made; the man who will abandon any party the moment it ceases to represent his ideas; the man who applauds virtue, honesty and efficiency wherever he finds them. The larger the proportion of such men, the more nearly perfect democratic governments will grow; the smaller the proportion the less will principles be considered, the more sluggish and irresponsible parties will become and the more frequently will they fail to express the popular will."

#### OFFICERS ELECTED.

The following officers were elected: President, James C. Carter, New York; first vice president, Charles Richardson, Philadelphia; second vice president, Samuel B. Capen, Boston; third vice president, Thomas M. Strong, Portland Ore.; fourth vice president, H. Dickson Bruens, New Orleans; fifth vice president, Edmund J. James, Chicago; secretary, Clinton Rogers Woodruff, Philadelphia; treasurer, George Burnham, Jr., Philadelphia; executive committee, Charles J. Bonaparte, chairman, Baltimore; George W. Guthrie, Pittsburg; William G. Low, Brooklyn; Joseph A. Miller, Providence; Harry A. Garfield, Cleveland; Oliver McClintock, Pittsburg; Dudley Tibbits, Troy; George W. Ochs, Chattanooga; John A. Butler, Milwaukee; Hector McIntosh, Philadelphia; Frank N. Hartwell, Louisville, and the officers.

#### MUNICIPAL MATTERS DETERMINED IN COURT.

**ADDITIONAL SERVITUDE.**—No new burden of servitude is imposed upon a public street or highway by constructing and operating therein a street railway for the transportation of passengers, the cars of which are propelled by electric power. *Southern Railway Co. vs. Atlantic Railway & Power Co.*, 36 S. E. Rep. (Ga.), 873.

**RIGHTS OF RAILWAY COMPANY IN STREETS.**—A railway corporation which is permitted to construct its tracks across an existing city street or public road does so subject to the condition that it must submit to the increased inconvenience to it which may result from the growth and development of the city or country, and the consequent increase of travel in the usual methods along such street or road. *Southern Railway Co. vs. Atlantic Railway & Power Co.*, 36 S. E. Rep. (Ga.), 873.

**ASSESSMENT FOR STREET IMPROVEMENTS.**—Under St. 1891, p. 201, § 7, subd. 1, providing that the costs of grading streets shall be assessed against the lots fronting thereon, such assessment should be made against the lots fronting on both sides; and hence an assessment of the total cost of

grading one side of a street against the lots fronting on that side was invalid. *San Diego Inv. Co. vs. Shaw*, 61 Pac. Rep. (Cal.), 1,082.

**CITY'S RIGHT TO OPERATE A QUARRY.**—There being an agreed statement of facts "that the tract of land on which this accident happened formerly belonged to Augusta Canal Company; that the right to quarry was conveyed to the city council of Augusta, under the provisions of the act of 1895, and that the City Council of Augusta has police jurisdiction over the tract; \* \* \* that this tract comes within the provisions of the act"—it was not ultra vires to operate the quarry for the purpose of obtaining material to repair the streets or a canal which the defendant had authority to own and operate. *City Council of Augusta vs. Owens*, 36 S. E. Rep. (Ga.), 830.

**CAPACITY OF CITY TO TAKE-BEQUEST FOR CHARITY.**—Under Code Va. c. 65, conferring on any board of education or other corporation power to take a gift, devise, or bequest for literary or educational purposes, a city whose charter provides that it shall have all such powers as are or may be conferred on the councils of cities and towns having a population of 5,000, by the constitution and general laws of the state, and that the administration and government of said city shall be vested in a board called the "common council," "and such other boards and officers as are now or hereafter may be provided for," and for which a special board of trustees is created by the legislature, to administer the trust created by the will under consideration, is competent to take a bequest for the erection of schools for the education of the poor. *Handley et al. vs. Palmer et al.*, 103 Fed. Rep. (U. S.), 39.

**TELEPHONES—RIGHT TO USE OF STREETS—CONSENT OF CITY.**—The statute of Virginia (Code 1887, §§ 1,287-1,290) authorizes telegraph and telephone companies to construct, maintain and operate their lines along any state or county roads or works, and over the waters of the state, and along and parallel to any of the railroads of the state, "provided the ordinary use of such roads, works, railroads and waters be not thereby obstructed; and along or over the streets of any city or town with the consent of the council thereof." Held, that as such statute does not define the conditions on which streets in cities and towns may be occupied, and requires the consent of the councils, not only to the construction, but also to the maintenance and operation of telegraph and telephone lines thereon, it delegates to such councils the power to attach conditions to their consent, especially in case of a city whose charter gives its council general authority over the streets, and provides that no company shall occupy any street without its consent, and that a provision, in an ordinance of such city granting the right to a telephone company to use certain streets, reserving to the council the right of repeal, was valid, and, on acceptance of the grant, became a condition binding on the company. *Southern Bell Telephone & Telegraph Co. vs. City of Richmond*, 103 Fed. Rep. (U. S.), 31.

**HEALTH—VALIDITY OF REGULATIONS—POWER OF COURTS TO REVIEW.**—A large discretion is necessarily vested in a state or municipal authorities in determining what is proper exercise of the police powers of the state for the protection of public health, and what measures are necessary to meet particular conditions and emergencies; but their determination is not final, and is subject to supervision by the courts. They may not, under the guise of protecting the public, arbitrarily interfere with private business, or impose unusual and unnecessary restrictions upon lawful occupations, and whether they have done so in a particular case is a judicial question. The purpose of quarantine regulations in case of the existence of a contagious or an infectious disease is to limit the spread of such disease to the fewest possible number of persons, by isolating the persons already affected or exposed from communication with all others so far as possible. Where not exceeding nine persons in a city were supposed to have died from the bubonic plague, and no living persons were known to have contracted the disease, a regulation establishing a general quarantine district, embracing a territory covering 12 blocks, in which more than 10,000 persons resided, which prohibits persons from entering or leaving such district, but permits free intercourse between all persons within it, cannot be upheld as a reasonable regulation for preventing the spread of the disease, but its effect must necessarily be, if the disease exists within

the district, to facilitate its spread among the persons confined within its limits. *Jew Ho vs. Williamson et al.*, 103 Fed. Rep. (U. S.), 10.

**Bonds—Issue—Validity — Bona Fide Purchaser.**—Defendant town issued interest bearing bonds, and delivered them to commissioners appointed by the supreme court, who were authorized by Laws 1892, c. 493, sec. 6, to sell such bonds "at not less than par." The commissioners sold the bonds for their face value to C. & S. on credit, without taking into account or providing for interest on the deferred purchase price. Held, that the sale on credit, without requiring payment of interest on the deferred payments of the purchase price, was, in effect, a sale for less than par, and, being forbidden by the statute, the issue of bonds was void, and plaintiff, though a bona fide holder for value from C. & S., can not enforce the bonds against the town. *Citizens' Sav. Bank of New York City vs. Town of Greenburg*, 65 N. Y. Supp. 554.

**Excavations in Sidewalks—Negligence.**—The evidence showed that a water meter was encased in an opening under a sidewalk; that six years thereafter the pavement at this place gave way; that the earth had settled, causing an excavation; and that the casing was full of water, which was flowing between the planks into the excavation, which contained little water. Plaintiff's testimony showed that the water came from a leak in the meter, and that the excavation was either caused by it, or the settling of the earth due to improper packing after construction of the casing, and that the sidewalk gave way and she was injured. Held, that the evidence established a prima facie case of negligence against the city, and whether it was overcome by testimony that the excavation was caused by an unusual rain, and that the meter and pipe connections were not defective, was a question for the jury. *Kane et al. vs. City of Philadelphia*, 46 At. Rep. (Pa.) 892.

**Moving Building Through Streets.**—Bridgeport City Charter, Sec. 41, empowers the common council to direct the removal of obstructions and nuisances in highways, and the removal of buildings through the same; and section 71 prohibits the moving of buildings through the streets except by license of the common council. An owner of a building, having obtained permission to remove a building through certain streets to a lot, consumed 10 days in moving it part of the way, when, with reasonable dispatch, it could have been moved to such point in two days. She then discovered that the lot named in the permit was not suitable, and asked permission to move it to another lot, over other streets, which would require two days longer than to remove it as originally intended. The common council refused the latter request, ordered the building removed from the highway within three days, and ordered the board of public works to remove it if the owner did not do so within such time. Defendant failed to remove it, and the board employed a contractor, who took down and removed the building. The owner offered to pay the expense of the removal to the lot mentioned in her second application. Held, that the common council acted within its discretion in refusing the second application, and the board of public works and the contractor, having acted within the order for removal, are not liable in damages to the owner. *Keating vs. McDonald et al.*, 46 At. Rep. (Conn.) 871.

## DEPARTMENT OF INQUIRY.

The Editor of "City Government" will undertake to furnish, through this department, replies to all inquiries pertaining to municipal affairs sent in by subscribers.

### WHAT CITIES HAVE REVENUE FROM FRANCHISES?—UNDERGROUND ELECTRIC WIRES?

Greeley, Colo., Sept. 1, 1900.

Editor of "City Government":

I would like information as to what cities throughout the country are receiving a fixed revenue from franchises that have been granted; and, where they have been granted for a percentage of the income, what percentage has been fixed upon.

Also, would like to know, if there are any municipalities that have a system of underground electric wires. What is the probable increase in expense of placing electric wires underground and overhead. Any information you may give me will be greatly appreciated.

W. C. BAKER, Mayor.

You will find, in this number, articles upon electric conduits and street railways, which present the practice in many cities. —[Editor of "City Government."

### DO COUNCILMEN APPOINT STREET RAILWAY EMPLOYEES IN YOUR CITY?

Baltimore, Md., Sept. 3, 1900.

Editor of "City Government":

I found, on being elected to the Council in this city, that my endorsement was much sought after by applicants for positions on the street railway as motormen and conductors. I have written such letters of endorsement myself, and other councilmen do the same thing. I am informed that this system is not peculiar to Baltimore. Can you inform me as to the practice in other cities?

GEORGE STEWART BROWN.

The editor of "City Government" has visited many cities in the United States and has made particular inquiries as to the relations existing between the councilman and the traction companies, but this is the first instance of the kind that has come to his notice. The editor doubts if the practice in Baltimore is followed extensively. Perhaps our readers can answer the question of Mr. Brown. —[Editor of "City Government."

### SANITARY ENGINEER WANTED.

Galveston, Sept. 8, 1900.

Editor of "City Government":

As chairman of a special committee of the Common Council, appointed to recommend a sanitary engineer, I write to ask you, whether you can recommend to us any expert sanitary engineer, whose services we might be able to secure for this work. Also inform us what is the usual charge: first, for a complete sewer plan for a city the size of Galveston, with a population of 37,000; and, second, what is the usual percentage for superintendence of construction of say about \$200,000 worth of sewer work?

ROBERT WEBBER, Chairman.

By turning to the advertising pages of "City Government" you will find a number of business cards of expert engineers, all of whom are heartily recommended by "City Government" as thoroughly reliable and competent. As to the usual fees and per centages charged by expert engineers for this work, you will find a complete answer, by several noted engineers, in "City Government" for February, 1899. —[Editor of "City Government."

### BARBER SHOP SANITARY RULES.

Troy, N. Y., Sep. 11, 1900.

Editor of "City Government":

Will you give me a list of rules or regulations used by some city for preventing the spread of disease in barber shops?

W. J. C.

Michigan has a state law regulating barber shops, the working of which has been successful. Before that law went into effect the city of Marquette had had a set of rules relating to barber shops for some time. The immediate cause of the adop-

tion of the rules was an epidemic of "barber's itch." The observance of the rules had the desired effect to stop the spread of the disease. There has been no further trouble. The rules follow:

"Being section one of ordinance regulating the sanitary condition of barber shops, adopted by the Common Council of the city of Marquette.

"The city of Marquette ordains:

"Section 1. That the following rules and regulations for the guidance, continuous observance and practice of barbers in the city be and they are hereby adopted and prescribed, and copies thereof to be furnished by the health officer shall be kept conspicuously posted in each and every barber shop by the proprietor or person in charge thereof.

"Rule I.—Each and every barber while practicing his trade shall keep his hands in a sanitary condition by paring and cleaning his finger nails and washing his hands immediately before any operation incident to his trade upon any person, in one of the following solutions: Mercury bichloride, one part to 2,000 parts of water; or carbolic acid or creoline, 30 drops to a pint of water.

"Rule II.—Each and every barber shall immediately before every cutting operation incident to his trade performed by him disinfect all razors, clippers, scissors and other tools used in such operations by dipping the cutting portions of such instruments in a bath of undiluted carbolic acid and then washing the whole instrument in either the carbolic acid or creoline solution specified under rule one above, and drying the same upon a towel specially reserved for such purpose, and shall disinfect all strops, combs and brushes immediately before each use thereof by washing the same in undiluted alcohol or in the creoline or carbolic acid solution specified under rule one above.

"Rule III.—No barber shall use upon or about any person being operated on by him any towel or napkin which has been used on or about any other person unless since such former use the same has been thoroughly cleansed and sterilized in boiling water.

"Rule IV.—No barber shall apply magnesia, alum, bay rum or other toilet dressings or applications to the head, face or neck of any person except by means of powder blowers or atomizers.

"Rule V.—Before each and every shaving of any person by any barber, he shall thoroughly scald with water at the boiling point any soap cup or lather dish used therefor.

"Rule VI.—No barber shall use for shaving any person, any soap, cup or dish, kept for public or promiscuous use unless there shall be kept for use therewith, and only used therewith alternately, at least two lather brushes, and which brushes shall, while not in actual use, have been kept continuously in a bath of carbolic or creoline solution of the strength specified under rule one above, or in a bath of undiluted listerine, nor use on any person any lather brush not kept for the exclusive use of such person unless the same has been kept and thoroughly soaked in any such bath in this rule mentioned." —[Editor of "City Government."

Philosophy triumphs easily over past evils and future evils, but present evils triumph over it.—Roche foucauld.

### CONDUITS FOR UNDERGROUND WIRES.

#### OWNED BY CITY AND PRIVATE COMPANIES—PRICE FOR RENTAL—REVENUE TO CITY.

In response to numerous inquiries "City Government" has been gathering information in relation to the provisions which cities have made for putting electric, telephone and telegraph wires underground. A blank, with the following list of questions, was sent to the leading cities in the United States:

1. Does your city own any underground electric conduits?
2. If so, what is the basis of rentals to private companies?
3. Are there any conduits owned and maintained by private corporations?
4. If so, what regulation or control does the city exercise over such conduits?
5. What revenue does the city derive from the privileges enjoyed by such corporations for maintaining their underground system?
6. Do the owners of such conduits, in any case, rent space to other corporations desiring to distribute electricity?
7. If so, what is the basis of rental, as close as can be determined by you?
8. Is your city provided with duct space free of charge in conduits owned by private companies?
9. If so, to what extent?

The replies are as follows:

#### ATLANTA, GA.

1, No; 2, —; 3, two; 4, the same regulation and control as all other electric affairs in the city; 5, none; 6, no; 7, —; 8, yes; 9, one duct throughout the system.

#### ALBANY, N. Y.

1, No; 2, —; 3, one; 4, company using conduit must keep the street over conduit in repair; 5, none; 6, no; 7, —; 8, no; 9, —.

#### BALTIMORE, MD.

1. Baltimore owns two distinct sets of conduits; the first, constructed for the use of the police and fire alarm wires; the second, is under construction at the present time, and is being built by the city for the use of all wires now strung overhead; 2, The municipal conduits are being constructed for the city by the Electrical Commission, which was appointed by the Legislature, and is an ex-officio body, composed of the Mayor, the City Register and the President of the Board of Fire Commissioners. They have not yet fixed the rentals to be charged; it is expected, however, that the rentals will not exceed seven cents per duct foot annually; 3, There is one company now operating in Baltimore, under legislation secured in 1899. The city is resisting the further extension of its conduit system. The case is now before the Court of Appeals at Annapolis; 4, The regulation of the city, according to the telephone company, is of a negative character; there is an ordinance, however, providing that the work shall be done under the supervision of the City Commissioner, who is the official in Baltimore who has control of the streets and highways of the city; 5, As provided by the ordinance, the private company is to provide one duct in each conduit for the use of the police and fire alarm wires. In addition to this the private company pays a rental of 30 cents a lineal yard for the first four miles of



street used, and 20 cents per lineal yard for all over four miles; 6, The private company has no power which permits it to rent duct space to other companies; 7, —; 8, (see answer to No. 5); 9, (see answer to No. 5).

## COLUMBUS, O.

1, No. 2, —; 3, yes; 4, only require that street pavement be kept in good order above them; 5, none; 6, no; 7, —; 8, no; 9, —.

## CAMBRIDGE, MASS.

1, No; 2, —; yes, 14 3-4 miles; 4, —; 5, none; 6, no; 7, —; 8, one duct in the telephone conduit and two in the West End Street Railway conduit; 9, —.

## DETROIT, MICH.

1, Those used by the municipal electric lighting plant; 2, the Electric Lighting Commissioners make a charge of five cents per duct foot, when used by private company; 4, No control in matter and Detroit telephone companies, the Western Union and Postal telegraph companies, and the Edison illuminating company; 4, No control in the matter of rates and so forth. All construction is under the supervision and inspection of the Board of Public Works; 5, None; 6, All wires, of every kind, are compelled to run underground within the half-mile circle of center of city. The various companies, having wires in this district, exchange courtesies in the way of short cuts," etc., through their conduits and manholes upon terms agreeable to themselves. There is no renting of duct space, of a public nature, outside of the municipal conduit; 7, (See answer to No. 6); 8, no; 9, —.

## DES MOINES, IA.

1, None; 2, —; 3, a small amount only; 4, same as over water or gas mains; 5, none; 6, think not; 7, —; 8, none; 9, —; (We are now seeking to bring about the installation of a system of conduits to be owned by the city and rented to the private corporation.)

## ERIE, PA.

1, Yes; 2, five cents per lineal foot, per duct, per year; 3, none. Other questions not answered.

## FALL RIVER, MASS.

1, No; 2, —; 3, yes, three; 4, the city has control of their construction, but no control of them after they are laid; 5, the free use of the conduits; 6, no; 7, —; 8, yes; 9, —.

## INDIANAPOLIS, IND.

1, No; 2, —; 3, yes; 4, —; 5, \$6,000 per annum from each of two telephone companies, and five per cent. of gross receipts from the Electric Light Company; 6, do not know; 7, —; 8, yes; 9, one duct in each conduit, and top cross arm of each pole.

## KANSAS CITY, MO.

1, No; 2, —; 3, yes; 4, none, except to approve plans; 5, ten cents per lineal foot when constructed, and ten cents per annum; 6, no; 7, —; 8, no; 9, —.

## LOWELL, MASS.

1, No; 2, —; 3, yes; New England Telephone and Telegraph Company; 4, —; 5, none; 6, no; 7, —; 8, yes; 9, there are two or more ducts provided for the fire alarm and police telegraph in each conduit.

## MILWAUKEE, WIS.

1, Yes; 2, used for fire and police departments only; 3, yes; 4, none; 5, none; 6, no; 7, —; 8, yes; 9, —.

## MINNEAPOLIS, MINN.

1, Yes; 2, the city does not rent; the conduit owned by the city is not large enough for present needs; 3, yes; 4, the City Engineer issues permits; allots places to be used by the company; 5, none; 6, yes; 7, no information on that point; 8, yes; 9, —.

## NEW HAVEN, CONN.

1, Yes, 95,506 feet; 2, —; 3, yes, by the Telephone Company; 4, not any, excepting as to construction; 5, none. Instead of receiving a revenue from the company, it pays seven cents per lineal foot for the use of one duct for the fire department; 6, no; 7, —; 8, no; 9, —.

## OMAHA, NEB.

1, No; 2, —; 3, yes, by the Telephone Company; 4, —; 5, none; 6, no; 7, —; 8, yes; 9, —.

## PHILADELPHIA.

1, Yes; 2, \$250 per mile of duct; 3, yes; 4, only in the laying and approval of location and material used in their construction; 5, from one to three ducts must be furnished the city free of cost; 6, no, except in one case; 7, have no knowledge of their charges; 8, (see answer to No. 5); 9, —.

## ST. LOUIS, MO.

1, No; 2, —; 3, yes; 4, —; 5, covered by a general payment of five per cent. of gross receipts; 6, No, except one company, which has special privileges; 7, not known; 8, yes; 9, one or more ducts in every conduit for fire and police telegraph and telephone purposes.

## ST. PAUL, MINN.

1, No; 2, —; 3, yes, by telephone and telegraph companies; 4, the city regulates and controls the location and construction of conduits; 5, none; 6, no; 7, —; 8, yes; 9, with space for the city's fire alarms in all the conduits.

## STREET RAILWAY REGULATIONS.

## LENGTH OF FRANCHISE—REVENUE DERIVED—FARE CHARGED—AND PAVING REGULATIONS IN FORTY-FIVE CITIES.

The "Department of Inquiry" of "City Government" has received a number of inquiries concerning the practice of the principal cities in dealing with street railways. In response to these, letters were sent to the City Clerks and General Managers of street railways of 100 of the largest cities in the United States. The particular information asked for related to fares, franchises and paving regulations. There were 53 replies from City Clerks and 12 from General Managers of street railways. The information obtained will be interesting to all the readers of "City Government."

All the cities heard from charge a regular fare of five cents, and most of them give transfers; but very few of them use tickets or permit any reduction in the price of a fare. The practice relating to paving between and outside of the tracks and keeping the same in repair is more uniform than that concerning the granting of franchises. A large per cent. of the cities require the street railway companies to pave between the tracks and two feet on either side, and to keep the same in repair. All the cities require, at least, the paving between the tracks and their repair, excepting Binghamton, N. Y., where the street railway company only pays for one-fifth of the pavement between the tracks—the company has a perpetual franchise and pays nothing to the city in return—and several Massachusetts cities.

The information from 45 cities is given in detail, as follows:

## BRIDGEPORT, CONN.

The question in regard to the length of the franchise granted was not answered. The only revenue received by the city is obtained from a realty tax on the property belonging to the company. The company paves between the rails and two feet outside.

## BINGHAMTON, N. Y.

The company has a perpetual franchise; issues no transfers; pays for one-

fifth of the pavement between the tracks; no revenue accrues to the city. The franchise tax law, recently passed, in New York, will soon be in operation, when the city will receive some return.

## COLUMBUS, O.

The duration of the street railway franchise in this city is in doubt; the matter is in the courts. The company pays only regular taxes to the city; issues transfers and sells six tickets for 25 cents; paves between its tracks and one foot outside of the outer rail.

## CAMDEN, N. J.

The company has a perpetual franchise; pays a car license of \$10 per year and a State tax of 2 per cent. on gross receipts which will revert to the city; issues transfers; paves and keeps in repair between the rails and two feet on each side.

## DETROIT, MICH.

The three cent lines have an average franchise of 25 years, the others, 12 years; the five cent lines pay 2 per cent. on gross earnings, and the three cent lines pay regular taxes only. Regular tickets at the rate of six for 25 cents, are good all day; eight tickets for 25 cents, good only from 5.30 a. m. to 8.00 p. m. Transfers are issued on all roads. The companies pave between the tracks and 18 inches outside of rails.

## DENVER, COL.

The company owns franchises of from 12 to 20 years; one franchise cost the company \$72,000, but none of the franchises bring revenue to the city. Transfers are issued. Half fare is charged for children under 12 years of age. The company paves and keeps in repair between the tracks and two feet outside of the rails.

## DULUTH, MINN.

The company has a 30-year franchise; pays nothing into the city treasury; issues transfers; paves and keeps in repair between tracks.

(To be concluded in November.)

## MISCELLANEOUS ADS.

HENRY P. BURGARD,  
General Contractor,  
Buffalo, N. Y.

E. F. MOORE,  
General Paving Contractor,  
Burlington, Vt.

ELISHA GREGORY,  
Contractor for Drilling Artesian Wells,  
60-64 Liberty St., New York.

## WANTED.

The W. J. Clark Co., Salem, Ohio, will buy one large and one medium size sheet metal drawing press—second hand will do if modern and cheap.

A GAS FITTER AND PLUMBER, thoroughly competent and educated, wishes to locate in a place of five to ten thousand population and open business alone or in employ of others where good work is desired.

Address Plumber, care this office.

## The Kitson Kerosene Arc Light

The best system for lighting Town or City streets, parks, etc.  
Installations made for commercial purposes in mills, factories, stores, etc.

### KITSON HYDRO-CARBON HEATING AND INCANDESCENT LIGHTING COMPANY.

8th & Willow Sts.

Philadelphia

# PUBLIC WORKS.

## Streets and Lighting.

### THE TOILET OF GREAT CITIES.

MACHINE VS. HAND STREET CLEANING—MACHINE ABSOLUTELY NECESSARY—PRACTICE OF SOME CITIES—POLITICS TO BLAME FOR DIRTY STREETS.

By W. J. McCannel.

The machine street sweeper is absolutely essential in the economical cleaning of all the streets—paved and unpaved—of the modern city. Hand work, while it gives perfect satisfaction, is much too expensive to be generally adopted. A happy combination of the two is found in most foreign and in some American cities. Machine sweeping has a deservedly growing popularity among contractors and street cleaning authorities. Its wise use by any department is sure to reduce the expenses and to promote economy. Superintendent McColl, of the Glasgow Cleansing Department, said in regard to machine sweeping in a recent letter to the editor of "City Government:" I am decidedly in favor of sweeping well paved streets with the rotary horse brushes. Cross-sweeping the granite paved streets by hand brushes was in existence at one time, but this practice was discontinued many years ago."

Before much progress is made in reducing the expenses of the street cleaning departments of United States cities; before the taxpayer will get more than 50 per cent. of the value of his money applied to this work, it will be necessary for him to take a more lively interest in the affairs of his city and bring about—with the assistance of his fellow taxpayers—the adoption of the merit system in the administration of the department and the exclusion of politics from its operations. This achievement is not beyond the realm of possibility and only awaits a determined and persevering effort to secure its consummation.

In the August issue of "City Government," Mr. Donald McColl, superintendent, gave an interesting account of the operations of the cleansing department of his city—Glasgow—which is a model of system and economy. Granting to Mr. McColl the credit for a skillful and faithful administration of the affairs of his department, it by no means follows that he could produce similar results on this side, when combatting with American politics and jobbery. There are equally good men on this side of the Atlantic, but never—except in the case of the late Col. Waring of New York—have they had anything like a fair show, to demonstrate their ability. There is not a street cleaning department in the country which is not more or less hampered by the party boss and the ward heeler. Practical methods, economical management and common sense have to give way to dirty politics. For these reasons no just comparison can be made between the American and the foreign city.

A number of British cities lease for a long term or purchase the land outright, hundreds of acres of bogland or other waste land for the use of the city. Glas-

gow has about 800 acres so employed. The city garbage is used for filling in and the manure for fertilizing purposes. In the course of a few years many acres of land are redeemed and made to blossom as the rose. Hay, oats, potatoes, and other grains and vegetables are raised and turned in toward the support of the department. These municipal farms are located from two to 15 miles from the city. The transfer of the refuse to the farms is made by the railway. This is a practice which might bear transplanting.

Mr. George A. D. Mackay, Inspector of the Lighting and Cleansing Department of Edinburgh, gives the following interesting account of the work in his city:

"Edinburgh has a population of 302,262; an area of 8,804 acres; and its assessable rental is £2,393,969. There are 165 miles of roads or streets, of which 78 are causewayed, 83 1-2 macadamized, and three and one-half laid with wood. The pavements consist of stone flags and granolithic.

"The work of street cleaning is carried out by the Corporation itself, and there is a cleaning department for that special purpose.

"The main thoroughfares of the city are swept every night by horse machines, but the cleaning proper is carried out during the day.

"The city, for cleaning purposes, is divided into 17 districts each of which has an overseer, whose duty it is to supervise the work of the scavengers.

"The collection of household and other refuse takes place daily in every part of the city; the carters and scavengers beginning their operations between 5:00 and 6:00 a. m., and finishing about 9:00 a. m. After breakfast, the carters are engaged in removing mud, sand and road scrapings, and the street sweepings which have been collected up to 3:30 p. m. They have also to attend to the watering of the streets.

"There are no ash-pits or refuse receptacles of any kind, everything being taken to the street in ash-pans or boxes and removed by the dust carts in the morning. The water closet system is universal throughout the city and, consequently, the refuse is entirely free from faecal matter.

"In Edinburgh, as in most other places, there is a growing difficulty in connection with the disposal of refuse. Formerly the neighboring farmers used to take the city manure and from this the Corporation derived a considerable revenue. That, however, is now changed, and in order to induce farmers and others to take it, we have to contribute a considerable part of the cost of carriage. The average amount per ton paid in this way is eight pence.

"In order to cope with the difficulty, the Edinburgh Corporation, some seven years ago erected a destructor to burn refuse. About 70 tons, or 16 per cent. of the total collection of the house refuse, is thus disposed of per diem. The expense, however, is considerable; the average cost being about three shillings and two pence per ton.

"The balance of our refuse is carried by rail, into the country where it is disposed of on waste lands which are thus reclaimed and made valuable from an agricultural point of view.

"The total annual collection, including sweepings, etc., for the last fiscal year, amounted to 172,414 tons.

"The waste paper is a growing nuisance in Edinburgh as elsewhere. We have an association for improving the condition of the poor; and some of their employees are engaged in collecting waste paper from houses, shops, warehouses, etc. The cleaning department supplies them with two horses and two vans; and daily collections of the material are made. The expense to the department is £200 per annum, but the outlay is hardly justified, there being little or no diminution of the nuisance.

"The standard of cleanliness is daily rising, with the result that more and more is expected from the cleaning department, and the cost is increased.

"The cleaning department has a workshop of its own, in which the carts, scavenger's barrows and other implements are made and repairs attended to.

"We employ 168 carters; and 262 scavengers, 50 of whom consist of boys.

"The week consists of 54 hours; and all on the staff are entitled to four clear holidays in the year for which they are paid. When hurt in the execution of their duty, the men get an allowance of half pay.

"The carters and scavengers are supplied with oil skin coats, leggings and sou' westeres.

"Carters are paid 23 shillings and wagonmen 25 shillings per week; and when employed on Sunday morning get one shilling additional.

"Scavengers start with 20 shillings per week and get another shilling after two years approved service. This, with two shillings for Sunday morning, makes their weekly wage 22 and 23 shillings respectively. Boy scavengers get from 11 to 15 shillings per week.

"The annual expenditure for our financial year 1898-99 was £49,779.

"It has, however, to be borne in mind that in Edinburgh the cleaning department has duties attached to it which are not undertaken by corresponding departments in other towns or cities. These are: The erection and maintenance of public conveniences, of which there are 11 in use, and new ones in progress; and the lime washing of courts and closets.

"A stud, consisting of 170 horses, is attached to the Edinburgh cleaning department."

The city of Buffalo (N. Y.) is so nearly the size of Edinburgh that it will be interesting to compare the two. Superintendent W. J. Hillery gives the following description of this department:

"According to the last census—1900—the city of Buffalo has a population of 352,219. It has an area of 42 square miles, or 26,880 acres, with a total mileage of streets amounting to 800, of which 332 1-2 miles are paved—reckoned in square yards, 6,242,260.

"The annual cost for hand work, for the last fiscal year, was \$66,813.02; for machine work, \$94,145.96, or a total of \$160,958.98.

"The only kind of pavements cleaned are stone, brick and asphalt. The streets are cleaned by hand during the day and by machines at night. The hand work is the more satisfactory. About 200 sweepers are employed, who are paid \$1.50 per day of eight hours' work. The sweepers



are employed by the city and clean only a small portion of the streets, while the machine work is done by the city.

"In further explanation of the questions answered I would say, that the city of Buffalo entered into a five-year contract for the cleaning of all paved streets and alleys at a rate of 33 1-2 cents per great square of 10,000 square feet for stone, and 23 1-2 cents for asphalt and brick. In 1899 there were cleaned under this contract; 8,110.72 miles of stone pavement, at a cost of \$43,038.72, or \$5.30 per mile; and 13,729.59 miles of asphalt and brick pavement, at a cost of \$51,107.24, or \$2.72 per mile—a total of 21,840.31 miles, at a cost of \$94,145.96, or \$4.32 per mile.

"In the business and part of the resident district this cleaning is supplemented by hand work, as follows: In the business district we have what is known as the 'block system,' which is composed of about 50 men with hand brooms, scrapers and carts, who patrol the several streets and gather up the droppings, waste paper etc., keeping the streets clean all the time. The refuse is put into the carts and afterwards collected by teams. This district includes about 13 miles of pavement, principally asphalt, and is cleaned at an expense of \$8.70 per mile.

"In the resident section there are 54 streets cleaned by what is termed 'private contract,' where the property owners petition the Common Council to contract for extra cleaning on their streets and pay for the same by local tax. This assessment amounts to about 10 cents per foot front. In this section the city furnishes teams for the collection of the sweepings. This section has 21.43 miles of pavement—all asphalt—and is cleaned at a cost of \$6.88 per mile, being worked on the same plan as the block system, but is less expensive on account of the traffic being much lighter, and so the men are enabled to cover a larger territory."

### FIRE DETECTION.

#### SOME IMPROVEMENTS IN BUILDING CONSTRUCTION AS RESPECTS FIRE—THE WATCHMAN THAT NEVER SLEEPS.

[*"Commercial and Financial Chronicle."*]

We have urged the need, steadily becoming more strenuous, of reforming the annual fire waste in this country. Not insurance, but waste of property by fire—the great bulk of it preventable—is the burden and the evil.

Nearly the sole retarding force upon fire has been along the line of extinguishment, but—and this should be clearly noted—it has reached its limit.

The first principle of extinguishment is that fire should be attacked and throttled at the start, while it is feeble.

Now there has come in a new application of the principle in the form of a wire, which is itself a continuous thermostat, and has the great advantage of serving other purposes as well. This "new-application" cable contains two wires, like others. The central plain wire, forming one side of the circuit, has a thin coating of soft metal; then comes the usual insulating coat, different, however, in being impregnated with a flux; wound spirally around this are about a dozen fine wires, which form the other side of the circuit; then an outer insulating wrapper covers the whole. The cable looks like any other coated wire of like size and insulation, and it conveys current for call bells, telephone, gas lighting, burglar alarm, and all the varied work of electricity in domestic and general service, electric lighting excepted. Ordinarily

ly this connection is made by pressing a button; the automatic action of the cable itself in detecting and reporting fire is its beautiful and novel feature.

It may have been doing ordinary work for years, but a few seconds after heat equivalent to that of a match reaches the cable the soft metal coating on the central wire fuses, and, according to a natural law, expands; having no room for expansion otherwise it forces itself through the insulation and, necessarily touches some one or more of the other wires; this makes electrical connection between them, closing the circuit by what is technically called "short circuit," and the bell sets up a ringing which continues until somebody stops it. Should a burglar find the cable and try to avoid it by cutting it, he inevitably makes this same short circuit by crushing the outer wires against the central one, and the bell rings for him also.

One application of this cable is that a reel of it may be unrolled at night and laid on or near any goods, or carried to any place desired, and may be re-wound in the morning. The exact place where the fire is may be shown by the annunciator in the familiar manner.—[The Montauk Multiphase Cable is referred to.—Editor of "City Government."]

### Splendid Results from One Hydrant.

Anyone who has had any doubts about producing large and long distance streams with the Eastman new nozzle system from an ordinary hydrant should read the report of the committee on exhibits at the Massachusetts State Firemen's convention held at North Adams, September 5-7. The tests were made by the association to find just what could be accomplished in large and long distance streams from one hydrant having 90 pounds gravity pressure.

The report of the committee was as follows:

No. of Test.	Size of Nozzle.	Distance of Stream, ft.	Pressure Pounds.
1.—Line of 2½ inch hose, 50 feet, with Deluge section added.....	1½ in.	180	88
2.—Two lines of 2½ inch hose, and Deluge section added.....	1½ in.	230	88
3.—One line hose, same as above..	1½ in.	170	90
4.—Two lines hose, same as above..	1½ in.	230	90
5.—Two lines hose, same as above..	1½ in.	222	88
6.—Three lines hose, same as above..	1½ in.	265	88
7.—Three lines hose, same as above..	2 in.	255	86

Samuel Eastman & Co., of East Concord, N. H., (represented by C. R. Robinson, proprietor), exhibited their patent nozzles and holders, the Eastman Deluge sets, etc., all comprising "The Eastman New Nozzle System." A practical test was made with their nozzles with splendid results. Captain E. T. Barlow, chairman; Captain C. Madison, Captain A. Windover, Captain J. D. Jondrow, Captain J. Fletcher, Captain F. J. Robare, Committee on Exhibits.

The Eastman new nozzle system has been the direct means of saving a score of conflagrations the past few months. For improving fire streams enquire for the Eastman new system.

### LARGER QUARTERS.

The H. Stevens' Sons Co., of Macon, Ga., is one of the pushing and growing firms of the Sunny Southland. The firm evidently believes in business expansion, whether it believes in national expansion or not. But then it is a matter of necessity with the concern. The firm has just moved into larger offices, all brand new built especially for its use, and fitted with all modern conveniences. The firm proposes to begin the new century right. "City Government" takes pleasure in noting this evidence of prosperity of this enterprising firm. May its fondest hopes be more than realized!

### IMPROVED "QUICK AS WINK."

The W. J. Clark Co., of Salem, Ohio, manufacturers of the famous "Quick as Wink" fire hose couplings, have recently patented a device by which they can make that quick acting coupling adaptable to suction as well as to pressure hose.

From the first introduction of the now quite extensively used "Quick as Wink" couplings for pressure hose there has been a want for the same quick acting couplings on suction hose. Many experiments have been made with a view to the accomplishment of the object, but the difficulty in making the coupling self-tightening at suction, as well as when under water pressure, has but recently been overcome. They are now so made, however, and are found to be much more convenient, for use on steamers and on hydrants where the water pressure is not sufficient to supply a steamer—than screw couplings.

The City of Joliet, Ill., having used them for some time in part of its equipment, has placed an order with the W. J. Clark Co. for more of them. We predict for this improvement an extensive sale as there are many places where suction hose much be used and much time and labor may be gained by their use.

### TEST OF "METROPOLITAN" ENGINE, AT PARIS TOURNAMENT, THAT WON FIRST PRIZE FOR AMERICAN FIRE TEAM.

The American Fire Engine Company has just received from Paris the report of L. E. Hale, Master Mechanic of the Kansas City Fire Department, and engineer of the American fire team at the World's Fire Congress in Paris, regarding the test made with the Metropolitan steamer, wherein it won first prize for America against all competitors of the world. The test was made at the Tournament grounds, Aug. 13th to 19th, and the engine was a third size "Metropolitan."

Five minutes after the fire was lighted the engine was started, having made 20 pounds of steam. In six minutes with 25 pounds of steam it began throwing water. In 11 minutes the engine carried 100 pounds of steam and 180 pounds water pressure, and in 12 minutes 130 pounds of steam and 240 pounds water pressure, with one stream.

The test was made through nozzles one-inch in diameter, throwing a horizontal stream 310 feet; perpendicular, 175 feet. With two streams, one-inch nozzles, horizontal, 275 feet; perpendicular, 150 feet. This beat the next nearest competitor 75 feet horizontal and 50 feet perpendicular.

Don't put too fine a point to your wit for fear it should get blunted.—Cervantes.

## KILFYRE A VALUABLE ADJUNCT.

CHIEF BAXTER RECOMMENDS ITS  
USE IN THE FIRE DEPARTMENT—  
GREATEST ENEMY OF FIRE.

The study of fire prevention and extermination has absorbed the attention of the scientific world to a considerable extent during the past few years. As a result of this research many appliances, for the protection of life and property have been added to our homes, public buildings and fire departments. We have fire escapes, automatic alarms and hand appliances for the purpose of putting out fires.

A large number of these inventions could be done away with but there are some well worth our attention and among these is the dry powder extinguisher "Kilfyre," manufactured by the Monarch Fire Appliance Co., of New York. It has been the method of the Monarch Co. to give practical demonstrations of the fire destroying power of "Kilfyre," but the time has come when many of the firemen, throughout the country, have proven beyond a doubt that "Kilfyre" is a valuable adjunct to any fire department.

It is not claimed that "Kilfyre" can do the work of a fire engine but that, in most instances, the fire can be put out before the engine is needed and with no damage to the property. There are many fires in chimneys and flues that are hard to reach with water and these are the instances where "Kilfyre" is no new invention but has stood the test of time.

All of those interested in city and village fire equipment, and its improvement, will be pleased to read the interview with Fire Chief Baxter, recently published by the Philadelphia Press.

When asked what he thought of "Kilfyre," the Chief replied:

"I read the article in 'The Press,' on 'Kilfyre,' the twentieth century fire precaution, with much interest. This is perfectly natural for a man who has devoted his life to fighting fire and whose steady aim is, and always has been, to reduce the fire record to a minimum.

"While Philadelphia, as 'The Press' stated, has added a very large quota to the fire record of the United States during the past year, I do not think there is any one who has any criticism to make of our fire department. The men are all loyal. In intelligence and skill our firemen rank well with the firemen connected with any department in the world.

"I notice that the New York 'World' states that the New York Fire Department is the finest in the world. This we cannot agree with.

"In regard to the new invention—'Kilfyre,' in answer to your direct question, I will say that we have 'Kilfyre' on all of our trucks, and we feel that it is a valuable aid to the department. It certainly has no superior for extinguishing chimney flues and indoor fires. We have demonstrated the worth of 'Kilfyre' by actual tests. This was particularly true of the fire at the residence of Mr. John G. Johnson when 'Kilfyre' did what its name implies—it killed the fire.

"From the handsome array of strong testimonials which 'The Press' has published, it would seem that 'Kilfyre' has, in every case where tested, measured up handsomely to the requirements and to what was expected of it. We have given a six-months' trial of 'Kilfyre,' with results more than satisfying.

"It is the policy of this department not to endorse fire extinguishers. The reason for this is obvious. However, it is my purpose to be in every case courteous and to answer all fair questions without equivocation or quibbling. Thus, in answer to your direct question as to what I think of 'Kilfyre,' from actual results, it is only fair for me to say that the discovery has proved itself of invaluable aid for chimney and indoor fires. We are always on the lookout for meritorious methods to kill fire, and we shall continue the use of 'Kilfyre' on our trucks.

"The fire department is always helped by the adoption and use of such methods of fire precaution. As is well known, a great many large fires have had small beginnings. With 'Kilfyre' at one's elbow to extinguish these small fires in their incipency many large conflagrations would no doubt be prevented and loss of life saved by this modern safeguard."

This statement was made to "The Press" representative and its importance cannot be overestimated. What Chief Baxter has said for the use of "Kilfyre" in the fire department can well be applied to the homes, factories, business blocks and in fact every department of life. How many lives and what an enormous amount of property might have been saved with a small amount of "Kilfyre" applied at the instant fire was discovered instead of waiting for the fire department.

The fact that "Kilfyre" destroys nothing but fire makes it especially adapted to fires around electrical apparatus. A switchboard on which water has been used is worthless, but by the use of "Kilfyre" the board is not warped or injured farther than the charring by the fire.

The following letter is one of many which the Monarch Fire Appliance Co. has on file to substantiate the claims set forth for "Kilfyre."

"Dallas, Texas, Jan. 2, 1900.

"Monarch Fire Appliance Co.,  
"Gentlemen:—It was only a few days ago that the wires in our switchboard room here at Dallas caught fire, and 'Kilfyre' was used with great success. Yours truly,  
"The Southwestern Telegraph and Telephone Co.  
"J. E. Farnsworth, General Manager."

Arc light fires, under high voltage, are extinguished as easily as the smallest blaze:

"Laclede Gas Light and Power Co.,

St. Louis, Mo., March 28th, 1900.

"Monarch Fire Appliance Co.,  
"Dear Sir:—In consideration of your very successful experiments at our Electric Station in extinguishing arcs up to 2,000 volts without a single miss, you will please equip the station for the present with one dozen 'Kilfyre' tubes. Yours truly,  
B. E. CHOLLAS, Engineer."

Subway fires have caused much trouble, and a great loss before they could be con-

trolled but with "Kilfyre" at one's elbow they become as simple to handle as any ordinary fire, which may be seen from the experience of the Western Union Telegraph Co.:

New York, Sept. 6, 1899.

"Monarch Fire Appliance Co.,  
"Gentlemen:—About 9 a. m., August 29th last, fire was discovered in a subway man-hole at Broadway and Exchange Place, in this city, where are a large number of telegraph cables. Upon removing the covers an ugly blaze developed, which two of your tubes completely extinguished.

"This result of this practical test of the tubes was very satisfactory to us. Very respectfully yours,

"Western Union Telegraph Co.,  
"A. S. BROWN, Elec. Engineer."

The Monarch Fire Appliance Co., No. 27 Williams street, New York, solicit correspondence from all those interested in fire protection and would be pleased to send printed matter giving full information as regards "Kilfyre."

## WATER WORKS DEPARTMENT.

The nineteenth annual convention of the New England Water Works Association was held at Rutland, (Vt.) September 19th and 20th. An interesting itinerary was arranged for, which included the Berkshire Hills, Saratoga, Lakes George and Champlain, Rutland and the Green Mountains, leaving Boston on the 17th. There were 65 members of the organization in attendance, many of whom were accompanied by their wives or friends.

## PARK LIBRARIES ADVANCE MORALITY.

A novel idea—the establishment of libraries in the small parks—was introduced in Brooklyn, N. Y., some time ago. It met with opposition at the beginning, but it has won its way and promises to be popular in other cities. It is claimed that the experiment has raised the tone of the neighborhood where the libraries are located, and has transformed rough boys into law-abiding citizens. There are three of these park libraries in operation.

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 Automatic Hose Valve. No. 656,759. Reuben D. Wirt, Independence, Me.  
 Dry Pipe Fire Extinguishing Apparatus. No. 656,837. John H. Derby, Brookline, Mass.  
 Elastic Tire for Wheels. No. 656,865. Alfred Tobler and Henri Samuel, Paris, France.  
 Fire Extinguisher. No. 656,873. Arthur C. Badger, Boston, Mass.  
 Voting Booth. No. 657,029. John N. Rafter, Jersey City, N. J.  
 Hose Coupling. No. 657,037. George W. Owings, Woodville, Oregon.  
 Railway-Switch. No. 657,099. Market Street Railway Co., San Francisco, Cal.  
 Incandescent Mantle. No. 657,141. Orlando M. Thowless, Newark, N. J.  
 Hydraulic or other valve. No. 657,168. Francis L. Lane and William Rainforth, Leeds, Eng.  
 Street and Station Indicator. No. 657,175. Harvey R. Miller, Bloomington, Ill.  
 Car Fender. No. 657,180. Richard F. Preusser, Washington, D. C.  
 Automatic Flushing Apparatus. No. 657,278. Abner W. Barton, New York City.  
 Method of Making Artificial Stone. No. 657,296. Soren Schougaard, Copenhagen, Denmark.  
 Spring-tread Horseshoe. No. 657,298. Otto W. Siebenhaar, Ladoga, Wis.  
 Wheeled Scraper. No. 657,321. Jesse Stubbs, Mount Pleasant, Iowa.  
 Smoke-Consuming Furnace. No. 657,324. Edward Thornton and George S. Smith, Cottsville, O.  
 Trolley Catcher. No. 657,342. Frank J. Fairchild, Wyandotte, Mich.  
 Apparatus for Purifying Water. No. 657,470. William Tweeddale, Topeka, Kan.  
 Ice-Removing Trolley for Electric Railways. No. 657,623. John J. Shirkey, Chicago, Ill.  
 Trolley-Head. No. 657,637. Stanislas Bourgeois, Manchester, N. H.  
 Fire-Escape. No. 657,641. Charles L. Buddenbohn and William Speer, Baltimore, Md.  
 Rubber-Pad Horseshoe. No. 657,718. Elmer A. Wilcox, Davenport, Iowa.  
 Electric Railway Signal. No. 657,730. Elmer H. Heath, Boston, Mass.  
 Fire-Escape. No. 657,735. Harris Safety Co., New York.  
 Rubber Vehicle Tire. No. 657,787. Calumet Tire-Rubber Co., Chicago, Ill.  
 Process for Making Asphalt Composition Powder. No. 657,799. William W. Varney, Baltimore, Md.  
 Chemical Fire-Extinguisher. No. 657,813. George W. Crout, Jr., Philadelphia, Pa.  
 Vehicle Tire. No. 657,832. Calumet Rubber-Tire Co., Chicago, Ill.  
 Process for Treating Deep Wells. No. 657,951. William Mooney, Atlantic Highlands, N. J.  
 Combined File-Case and Index. No. 658,030. Ignatius L. Unterbrink, Botkins, O.  
 Hose-Coupling. No. 658,045. Edward T. Shaw, Arlington, Vt.  
 Screw Coupling. Nos. 658,085, 658,086, 658,087. Clinton A. Higbee, Philadelphia, Pa.  
 Combination Hose-Nozzle. No. 658,155. John E. Hobbs, North Berwick, Me.  
 Soft-Tread Horseshoe. No. 658,221. John Riley, New York, N. Y.

## TENEMENTS MUST HAVE BATH TUBS.

An ordinance that will be intensely interesting to the landlords of Cincinnati, as well as to the poorer classes of the city, has been introduced in the Board of Legislation by Alderman Mullen. It provides that owners of tenement houses, or those having charge of renting the same, be required to put in bath tubs for the use of the tenants. Each tub is to be put into a compartment set apart for this purpose, one on each floor of every tenement house, and must have a shower bath attachment, but only cold water need be used. The room set apart for the bath room must have an entrance from a hallway, and must not be connected directly with any other room. The tubs and surroundings must be of non-absorbant materials, and provided with suitable traps and draining pipes, and open plumbing.

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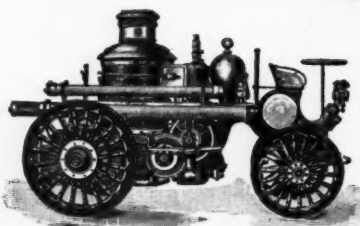


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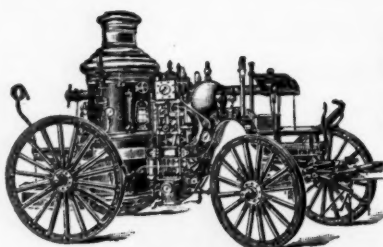
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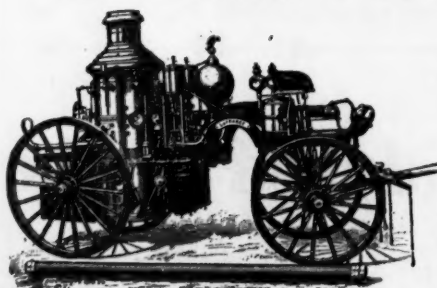
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